DOCUMENT RESUME

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ABSTRACT

Competency profiles are presented for 17 instructional programs/occupational areas. These forms provide for recording the following information: instructional program, student name and other identifying information (address, telephone number, social security number, emergency contacts), class information (method of instruction, grade, dates of enrollment, instructor), on-the-job training/work experience, and followup information/record. A rating scale to evaluate student performance on the related job competencies is also part of each competency profile. Another rating scale is also included to evaluate the trainee on essential elements for all vocational programs. Profiles are provided for these instructional programs/occupational areas: business machine repair, auto mechanic, auto body repairer, carpentry, bricklaying, commercial artist, electrician, plumbing, machinist, welder, printer, vocational electronics technician, ironworker, radio and television repairer, computer maintenance technician, pre-tech law enforcement, and heavy equipment repairer. (YLB)

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ED272676

INSTRUCTIONAL MATERIALS FOR INDUSTRIAL PREEMPLOYMENT LABORATORY

COMPETENCY PROFILES

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Department of Agricultural Education
Texas A and M University
College Station, Texas

CE 044 412

TX8513308 10

TEXAS EDUCATION AGENCY
Standard Application System (SAS)
Vocational Program Improvement Activities

School Year 1984-85
SUPPORT SCHEDULE #4A-
Program or Component Abstract

021-501
Co./District No.

Project No.
(Assigned by TEA

April 30, 1984
Date Submitted

No further monies or other benefits may be paid out under this program unless this report is completed and filed as required by existing law and regulations (20 U.S.C. 2401; 45 CFR 104).

PART A - PROJECT IDENTIFICATION

1. NAME OF STATE SUBMITTING: TEXAS

2. TYPE (CHECK ONE): ☒ CONTRACT ☐ IN-HOUSE ☐ CONTRACT NO. (SPECIFY) ____ ☐ PROJECT NO. (SPECIFY) ____

3. TITLE OF PROJECT: Instructional Materials for Industrial Pre-Employment Laboratory

4. PRINCIPAL INVESTIGATOR(S) AND ORGANIZATION(S): Earl Knebel, Agricultural Ed., Texas A&M University

TELEPHONE NO. (INCLUDE AREA CODE): (409) 845-2951

5. ADDRESS (INCLUDE NUMBER, STREET, CITY, STATE, AND ZIP CODE):
Ag. Ed. Department
Texas A&M University
College Station, Texas 77843

CONGRESSIONAL DISTRICT: 6th

6. ORGANIZATION TYPE (CHECK PRIMARY GROUP(S)):
☒ COLLEGE/UNIVERSITY
☐ LOCAL EDUCATION AGENCY
☐ INTERMEDIATE SERVICE AGENCY
☐ INDIAN TRIBE
☐ STATE EDUCATION AGENCY
☐ SMALL BUSINESS
☐ NON-PROFIT
☐ OTHER (SPECIFY) ____

7. FUNDING PERIOD
STARTING DATE July 1, 1984 ENDING DATE June 30, 1985

8. SOURCE OF P.L. 94-482 FUNDS
☐ SECTION 131 $ ____
☐ SECTION 132 $ ____
☐ SECTION 133 $ 225,986
☐ OTHER (SPECIFY) $ ____

9. CHARGED TO FEDERAL APPROPRIATION YEAR(S): P5

10. LEVEL OF ACTIVITY'S IMPACT (CHECK PRIMARY LEVEL)
☐ ADULT
☐ POST SECONDARY
☒ SECONDARY
☐ OTHER (SPECIFY) ____

11. LOCATION
☐ ISOLATED RURAL
☐ SUBURBAN
☐ INNER CITY
☐ OTHER (SPECIFY) N/A

12. SPECIAL POPULATION TARGET GROUPS (CHECK PRIMARY GROUP(S))
☒ LIMITED ENGLISH PROFICIENCY
☒ HANDICAPPED
☒ DISADVANTAGED
☐ DISPLACED HOMEMAKER
☐ SINGLE HEAD OF HOUSEHOLD
☐ PART OR FULL TIME EMPLOYMENT
☐ PERSONS IN NON-TRADITIONAL VOCATIONS
☐ WOMEN
☐ MEN
☐ AMERICAN INDIAN OR ALASKAN NATIVE
☐ ASIAN OR PACIFIC ISLANDER
☐ BLACK, NOT OF HISPANIC ORIGIN
☐ HISPANIC
☐ WHITE, NOT OF HISPANIC ORIGIN
☒ OTHER (SPECIFY) Regular

13. WILL THE PRODUCT BE PLACED IN THE CLASSROOM WITHIN 5 YEARS? ☒ YES ☐ NO

PART B - PROJECT DESCRIPTION-ABSTRACT FORM

(THE REQUIREMENTS FOR THE ABSTRACT ARE SHOWN ON THE REVERSE SIDE)

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SAS-303R85

PART B · PROJECT DESCRIPTION-ABSTRACT

(FILL IN THE FOLLOWING PROJECT DESCRIPTION OR SUBSTITUTE A PROJECT ABSTRACT
ATTACH ADDITIONAL SHEET, IF NECESSARY)

JECTIVES (DESCRIBE THE MAJOR OBJECTIVES OF THIS PROJECT)

To provide current and updated instructional materials for students and teachers in pre-employment programs, the objectives of this project will be to: develop competency profiles for six occupational programs; one major instructional block for building trades; a course outline for pre-technical law enforcement technology; revise and update four existing publications; revise 12 of the Vocational Industrial Clubs of America (VICA), Texas Association, Youth Leadership Competency Examinations; revise the VICA competitive activities guide; and update previously completed competency profiles in accordance with 19TAC Chapter 75: curriculum.

OCEDURES (DESCRIBE THE PROCESSES TO BE USED IN IMPLEMENTING AND EVALUATING THIS PROJECT)

Materials development priorities are established in conference with Texas Education Agency Staff, and shall be appropriate for the use of instructors and students in pre-employment programs. Materials will be consistent with current industry practices and developed in consultation with an advisory committee that includes business and industry. Materials will address productivity, private enterprise, entrepreneurship, and employment opportunities. Provisions will be made to meet the needs of disadvantaged, handicapped, and limited English proficiency students, as well as insure equal access. All materials will contain those essential elements identified in appropriate student competency profiles. In trade areas applicable, computer application will be addressed. Acceptable validating procedures will be utilized to insure validity of all materials. Assistance will be given to TEA staff in providing teacher-in-service training in the proper use of materials.

ODUCT(S) TO BE DELIVERED (INDICATE TYPE, QUANTITY AND RECIPIENTS. R&D OUTCOMES MAY BE A PRODUCT, A MODEL, A POLICY NDING, OR A RESEARCH RESULT. R&D PRODUCTS ARE TANGIBLE, TRANSPORTABLE, SELF-CONTAINED OUTCOMES OF THE R&D OCESS. SOURCE: ADAPTED FROM "THE R&D EXCHANGE: AN EMERGING EFFORT", NATIONAL INSTITUTE OF EDUCATION, 1978.)

1. Student competency profiles for the following occupations: Computer Maintenance Technician, Radio/Television Repairer, Pre-Technical Law Enforcement Technician, Business Machine Repairer, Heavy Equipment Repairer, and Iron Worker.
2. Major Instructional block for Building trades in Interior/Exterior Trim.
3. Basic Course Outline for Pre-Technical Law Enforcement Technology.
4. Revision of existing materials: Basic Course Outlines for Printing, Drafting, Electrical Trades and the Shop Teachers Handbook.
5. Revision of 12 of the (VICA), Texas Association, Youth Leadership Competency Exams, and the VICA Competitive Activities Guide.
6. Update previously completed competency profiles in accordance with 19TAC Chapter 75: curriculum.
7. Materials will be approved by the Director for Vocational Industrial Education prior to final printing and two copies of quarterly progress reports and ten copies of a comprehensive final report will be submitted along with a copy of the finished product to the TEA.

Quality Control of Product(s) (Describe Processes to be Used to Assure High Quality Product(s)

Quality of subject matter content will be maintained through use of an advisory committee consisting of teachers, teacher educators, state staff, and representatives of industry. Development will be made by experienced subject matter specialists and edited. Illustrations will be used to compliment the materials where needed. All materials will be printed on off-set presses on quality paper, collated, and bound for dissemination. Copies will be sent out for review and evaluation by appropriate authorities prior to final printing.

Signature of Research Coordinator Unit	Date
[illegible]	6-25-85

TX8513308

JOB COMPETENCIES

DIRECTIONS: Evaluate the student using the rating scale below. Check the appropriate number to indicate the degree of competency. The rating for each of the tasks should reflect the job readiness rather than the grade earned in the class.

RATING SCALE:
4 Skilled - can work independently with no supervision
3 Moderately skilled - can perform job completely with limited supervision
2 Limited Skill - requires instruction and close supervision
1 No exposure - no experience or knowledge in this area

Electric Typewriters

4 3 2 1

- [ ] Removes, replaces, and adjusts carrier return mechanism.
- [ ] Adjusts carrier return cord.
- [ ] Removes, replaces, and adjusts drive belt.
- [ ] Adjusts for negative rotation.
- [ ] Makes adjustment for proper tilt.
- [ ] Removes, replaces, and adjusts tilt mechanisms.
- [ ] Removes and replaces tilt tape.
- [ ] Makes adjustments on index mechanism.
- [ ] Adjusts keyboard selection mechanism.
- [ ] Adjusts motor belts.
- [ ] Adjusts motor pulleys.
- [ ] Adjusts operational control mechanism.
- [ ] Adjusts impression mechanism.
- [ ] Makes adjustments on rocker assembly.
- [ ] Adjusts rotate arm.
- [ ] Adjusts rotation spring tension.
- [ ] Aligns rotate latches.
- [ ] Removes, repairs, and replaces motor.
- [ ] Replaces motor condenser.
- [ ] Replaces motor switch.
- [ ] Replaces rotate tapes.
- [ ] Describes pitch and proportional type.

Electronic Machines

4 3 2 1

- [ ] Understands and uses computer terminology.
- [ ] Describes basic computer components and their functions.
- [ ] Identifies and compares computer languages.
- [ ] Installs and tests business computers.
- Installs and tests internal optional equipment:
  - [ ] Memory expansion.
  - [ ] Display adapter.
  - [ ] Printer adapter.
  - [ ] Diskette drives.
  - [ ] Fixed disk drives.
  - [ ] Color/graphics monitor adapter.
  - [ ] Modems.
- Installs and tests peripherals:
  - [ ] Monochrome display.
  - [ ] Color display.
  - [ ] Graphics printer.
  - [ ] Color printer.
  - [ ] Communications cable.
  - [ ] Serial adapter cable.
  - [ ] Daisywheel printer.
- [ ] Performs routine computer maintenance.
- [ ] Troubleshoots computer power supply systems.
- [ ] Troubleshoots the monitor systems.
- [ ] Troubleshoots register problems.
- [ ] Cleans and services disk systems.
- [ ] Troubleshoots and repairs disk systems.
- Develops software and uses systems:
  - [ ] DOS.
  - [ ] CP/M.
- Demonstrates understanding of telephone/communication systems:
  - [ ] ASYNC.
  - [ ] SYNC.
  - [ ] BISYNC.
- Troubleshoots printers:
  - [ ] Dot matrix.
  - [ ] Daisywheel.
  - [ ] Ink jet.
  - [ ] Laser.
- [ ] Troubleshoots electronic cash registers.

Electronic Theory

4 3 2 1

- [ ] Compares digital techniques to analog.
- [ ] Describes digital electronic circuits.
- [ ] Defines digital design problems and solutions.
- [ ] Describes structure and operation of semi-conductors.
- [ ] Tests semi-conductor diodes/transistors using volt-ohm meters.
- [ ] Identifies and tests capacitors.
- [ ] Describes capacitor functions in machines.
- [ ] Makes in-service checks with VOM.
- [ ] Lists basic types of logic elements.
- [ ] Identifies logic functions from truth tables.
- [ ] Identifies logic functions from logic equations.
- [ ] Identifies basic types of integrated circuit packages.
- [ ] Describes function of TTL, ECL, and CMOS integrated circuits from schematics.
- [ ] Selects digital ICs for given applications.
- [ ] Identifies types and functions of flip-flops using logic diagrams.
- [ ] Describes optically coupled electronic systems.
- [ ] Lists optoelectronic methods of communication.
- [ ] Describes functions of photocoupled data systems.
- [ ] Develops displays using LEDs.
- [ ] Makes applications of fiber optics.
- [ ] Describes operating principles of lasers and masers.
- [ ] Troubleshoots systems using oscilloscope.

Adding Machines - Calculators

- ☐☐☐☐ Installs new and reconditioned machines.
- ☐☐☐☐ Describes operational features on various machines.
- ☐☐☐☐ Removes and replaces covers and rubber parts.
- ☐☐☐☐ Removes, repairs, and adjusts carriages.
- ☐☐☐☐ Removes, repairs, and adjusts electrical/electronic components.
- ☐☐☐☐ Removes, repairs, and adjusts keyboards and key buttons.
- ☐☐☐☐ Removes, repairs, and adjusts stop pin section.
- ☐☐☐☐ Removes, repairs, and adjusts print section.
- ☐☐☐☐ Removes, repairs, and adjusts cam section.
- ☐☐☐☐ Removes, repairs, and adjusts accumulator section.
- ☐☐☐☐ Removes, repairs, and adjusts transfer section.
- ☐☐☐☐ Removrs, repairs, and adjusts credit balance section.
- ☐☐☐☐ Cleans and lubricates adding machines and calculators.
- ☐☐☐☐ Performs routine inspection and maintenance.

Electrical

- ☐☐☐☐ Demonstrate understanding of theory of electricity.
- ☐☐☐☐ Describes power generation and distribution.
- ☐☐☐☐ Defines voltage, current, and resistance.
- ☐☐☐☐ Reads and interprets schematic diagrams.
- ☐☐☐☐ Reads and interprets electrical prints.
- ☐☐☐☐ Identifies types of circuits.
- ☐☐☐☐ Determines size and type of grounding connectors.
- ☐☐☐☐ Determines size and type of cable needed for machine installation.
- ☐☐☐☐ Solders electrical connections.
- ☐☐☐☐ Installs and connects various types of switches.
- ☐☐☐☐ Connects 120V, 240V, 120/240V circuits to city code specifications.
- ☐☐☐☐ Defines alternating current applications.
- ☐☐☐☐ Defines direct current applications.

Entrepreneurship

- ☐☐☐☐ Designs functional office machine repair shop.
- ☐☐☐☐ Requisitions tools and equipment.
- ☐☐☐☐ Requisitions supplies and parts.
- ☐☐☐☐ Estimates repair costs.
- ☐☐☐☐ Interprets and updates parts catalogs.
- ☐☐☐☐ Interprets and updates service manuals.
- ☐☐☐☐ Receives office machines for repairs.
- ☐☐☐☐ Demonstrates office machine operation.
- ☐☐☐☐ Completes service - repair invoice.
- ☐☐☐☐ Receives maintenance contract machines.
- ☐☐☐☐ Prepares repair shop budget.
- ☐☐☐☐ Conducts inventory.
- ☐☐☐☐ Schedules repair jobs.
- ☐☐☐☐ Assigns work schedules.
- ☐☐☐☐ Compares expense to revenue in evaluating jobs.
- ☐☐☐☐ Describes purpose and function of service agreements.
- ☐☐☐☐ Identifies various aspects of customer relations.
- ☐☐☐☐ Prepares flow charts on office machines.
- ☐☐☐☐ Describes management of an outside territory.

Duplicators - Electrostatic Copiers

- ☐☐☐☐ Installs new or reconditioned duplicators.
- ☐☐☐☐ Inspects and adjusts motor drive assembly.
- ☐☐☐☐ Adjusts paper feed assembly.
- ☐☐☐☐ Lubricates bearings on feed rollers.
- ☐☐☐☐ Cleans and inspects print control mechanism.
- ☐☐☐☐ Adjusts and checks print control mechanism.
- ☐☐☐☐ Adjusts cam and aligns cylinder.
- ☐☐☐☐ Cleans and inspects cylinder.
- ☐☐☐☐ Cleans and lubricates duplicators.
- ☐☐☐☐ Performs operational checks.
- ☐☐☐☐ Replaces broken paper feed parts.
- ☐☐☐☐ Removes and replaces clutch pulleys.
- ☐☐☐☐ Removes and replaces motor assembly.
- Troubleshoots electrostatic copier components:
  - ☐☐☐☐ Drums.
  - ☐☐☐☐ Sheet feeds.
  - ☐☐☐☐ Image transfer.
  - ☐☐☐☐ Toners.
  - ☐☐☐☐ Fiber optics.
  - ☐☐☐☐ Lens.
  - ☐☐☐☐ Reduction/enlargement.
  - ☐☐☐☐ Developers.
  - ☐☐☐☐ Sorters.
  - ☐☐☐☐ Document handlers.

ESSENTIAL ELEMENTS FOR ALL VOCATIONAL PROGRAMS

DIRECTIONS: Evaluate the trainee, using the rating scale below. Check the appropriate number to indicate the degree of competency. The rating for each of the tasks should reflect job readiness rather than the grade given in the class.

RATING SCALE:
4 Skilled—can work independently with no supervision
3 Moderately skilled—can perform job completely with limited supervision
2 Limited skill—requires instruction and close supervision
1 No exposure—no experience or knowledge in this area

4	3	2	1	
				Identifies characteristics and responsibilities of leaders
				Demonstrates characteristics and responsibilities of group members
				Participates in meetings according to rules of parliamentary procedures
				Functions effectively on committees by accepting assigned responsibilities
				Plans and conducts effective group leadership activities
				Participates in society in a democratic way

4	3	2	1	
				Evaluates career options and employment opportunities
				Demonstrates ability to complete job application, interview and follow-up
				Follows written and oral instructions to complete job task
				Demonstrates punctuality and dependability
				Follows rules, standards, and policies of the work place
				Demonstrates the ability to work cooperatively with others

4	3	2	1	
				Demonstrates responsibility in completing job tasks
				Exhibits work habits and attitudes that increase productivity
				Recognizes opportunities and options for business ownership
				Identifies entry level procedures and planning processes needed to open a business
				Utilizes terms associated with small business
				Recognizes the role of small business in the free enterprise system

COMPETENCY PROFILE

Instructional Program (Occupational Objective) _____ School _____ Date _____

Name _____ (Last / Middle / First) Social Security No _____ Phone _____

Address _____ Age _____ Date of Birth _____ Sex _____

Racial/Ethnic Designation _____ Special Needs _____

In Case of Emergency, Contact _____ Address _____ Home phone _____ Business phone _____

OR

Contact _____ Address _____ Home phone _____ Business phone _____

Method of Instruction	Grade	Enrollment Date	Withdrawal Date	Completion Date	Total Class Hours	Total Laboratory Hours	Total On-the-job Training Hours	Instructor

ON-THE-JOB TRAINING/WORK EXPERIENCE

Duration of Employment	Job Title	Supervisor's Name	Training Station	Address of Employer	Phone

FOLLOW-UP RECORD

Date	Current Address	Ed. Status	Educational Institution	Educational Objective
		☐ Attending ☐ Not Attending		

Not in Labor Force	Un-employed	Military Status	Employed	Employer	Address	Supervisor	Position	Related to Training	Salary
								☐Yes ☐No	

AUTO MECHANIC
JOB COMPETENCIES

DIRECTIONS: Evaluate the student using the rating scale below. Check the appropriate number to indicate the degree of competency. The rating for each of the tasks should reflect job readiness rather than the grade earned in the class.

RATING SCALE:
4 Skilled - can work independently with no supervision
3 Moderately skilled - can perform job completely with limited supervision
2 Limited skill - requires instruction and close supervision
1 No exposure - no experience or knowledge in this area

4 3 2 1

BASIC SKILLS

Identifies and corrects or reports potential safety hazards.
Identifies and demonstrates correct use of fire extinguishers.
Identifies potential ventilation hazards and takes corrective action.
Identifies and utilizes proper storage for inflammables.
Observes personal job safety procedures.
Demonstrates proper use, safety, and care in working with tools and equipment.
Demonstrates ability to use service and parts manuals.
Demonstrates knowledge in language of trade.
Reads and interprets safety labels and signs.
Demonstrates care and safety in handling or driving customer's automobile.
Demonstrates ability to apply basic math as related to trade.
Demonstrates ability to properly use and care for precision tools and test equipment.
Demonstrates knowledge in the operational function of the major components.
Makes cost estimate; prepares customer bills.
Maintains records.
Inventories materials.
Orders tools and supplies.
Identifies opportunities and options for business ownership.

ENGINE

COOLING SYSTEM

Checks and restores coolant level and strength.
Inspects and replaces drive belts.

4 3 2 1

VALVE TRAIN

Removes and replaces cylinder head and gasket.
Checks and assembles cylinder heads.
Refaces valves and stems.
Resurfaces valve seats.
Checks valve springs for square and tension.

POWER TRAIN

CLUTCH

Tests and makes diagnosis of clutch malfunction.
Adjusts or removes and replaces clutch linkage.
Removes and replaces clutch assembly.
Replaces pilot bearing.
Removes, replaces, and adjusts shift linkage.
Inspects and identifies parts.

DRIVE LINE

Road tests and makes diagnosis of drive line noises and vibrations.
Removes, inspects, and replaces drive shaft assembly.
Inspects drive line and pinion angle.
Removes and replaces drive line support bearing.
Removes and replaces u-joints.

STANDARD TRANSMISSION

Road tests car and makes noise diagnosis.
Inspects for proper lubricant type and level.
Removes, replaces, and adjusts shift linkage.
Inspects, removes, and replaces extension housing seals and bushings.
Removes and replaces transmission mounts.
Removes and replaces transmission.
Overhauls standard transmission.
Inspects, removes, and replaces internal parts.
Road tests for proper shifting.

AUTOMATIC TRANSMISSION

Road tests for malfunctions - noises and vibrations.
Inspects and adds fluid to proper level.
Replaces filter and fluid.
Adjusts throttle linkage.
Adjusts floor shift linkage.
Adjusts neutral safety switch.
Adjusts electrical kick-down switch.
Removes, replaces, and checks vacuum modulator.
Removes and replaces transmission or engine mounts.
Adjusts bands.
Stalls and oil pressure tests transmission.

4 3 2 1

FUEL SYSTEM

Checks and replaces fuel filters.
Inspects, tests, and replaces fuel lines.
Pressure tests and replaces fuel pump.

EMISSION CONTROLS

Inspects and replaces PCV system.
Inspects, tests, and repairs air injection reaction type system.
Inspects, tests, and repairs exhaust gas recirculation system.
Identifies different types and operation of emission controls.
Interprets electrical and vacuum schematics.
Inspects, tests, services catalytic converter.
Tests, repairs, and replaces evaporative emission controls.

IGNITION

Tests engine on scope analyzer and makes diagnosis.
Tests, repairs, and replaces ignition primary circuit.
Tests, repairs, and replaces parts of the ignition system secondary circuits.
Inspects, overhauls, and replaces distributor.
Tests, repairs, and adjusts distributor controls.
Inspects and replaces control module of electronic system.
Inspects and replaces pick-up coil of electronic system.
Tests and replaces automatic spark advance.
Tests, services, and replaces electronic ignition system.

AIR CONDITIONING AND HEATING

AIR CONDITIONING

Makes visual inspection of air conditioning system.
Makes diagnosis of electrical controls.
Makes diagnosis of air diverter doors.
Performs leak test - halide torch.
Performs leak test - electronic tester.
Performs operational test and makes diagnosis.
Services air conditioning system.
Overhauls air conditioning compressor.
Inspects, tests, and replaces air conditioning refrigerant components.

HEATING

Makes diagnosis of heating systems malfunction.
Inspects and replaces heater control valve.
Removes and replaces heater core.

hoses, pulleys, and overflow tank.
Inspects baffles and fins for restriction.
Checks cooling system for exhaust leakage.
Removes and replaces radiator and shroud.
Inspects and replaces thermostat and housing.
Inspects and replaces water pump.
Inspects and replaces core (freeze) plugs.
Pressure tests cooling system.

ENGINE TESTS

Makes diagnosis of coolant loss.
Makes dry and wet compression tests.
Makes diagnosis of overheating problems.
Makes diagnosis of leaks.
Makes diagnosis of vacuum leaks.
Makes diagnosis of exhaust leaks.
Uses cylinder leakage tester.
Makes diagnosis of mechanical engine noise.

EXHAUST SYSTEM

Removes and replaces exhaust pipe, extension, muffler, and resonator.
Removes and replaces exhaust manifold.
Removes, repairs, and replaces heat riser.
Inspects, services, and replaces catalytic converter.

MINOR REPAIR SERVICE

Changes oil and filter.
Removes and replaces oil pump and screen.
Removes and replaces valve cover gaskets.
Adjusts valves.
Removes and replaces motor mounts.
Removes and replaces intake manifold.
Removes and replaces timing gear cover, chain, gear, and harmonic balancer.
Removes and replaces valve stem seals with cylinder and head installed.

MAJOR REPAIR SERVICE

Removes and replaces engine.
Removes cylinder ridge.
Removes and replaces rods and pistons.
Disassembles and reassembles pistons and rods.
Measures and services piston assembly.
Removes, services, and replaces crankshaft and bearings.
Removes and replaces rear main oil seal.
Measures cylinder bore.
De-glazes cylinder.
Removes and replaces camshaft, bearings, and lifters.

Makes diagnosis of cooler problems.
Inspects and flushes cooler system.
Makes minor leak repairs.
Installs auxiliary cooler.
Removes and replaces transmission.
Removes and replaces housing, bushing, and seal.
Removes and replaces front pump seal and bushing.
Assembles and disassembles transmission.
Makes diagnosis of planetary gear assembly.
Overhauls clutch assembly.
Makes diagnosis of governor and repairs.
Makes diagnosis and cleans valve body.
Makes diagnosis, removes, and replaces sprag clutch.
Checks converter removed from car.

REAR AXLE (FINAL DRIVE TRAIN)

Inspects for proper lubricant type and level.
Road tests and makes diagnosis of rear axle noises.
Removes and replaces rear axle bearings and seals.
Removes and replaces pinion seals.
Removes and replaces final drive assembly.
Inspects and overhauls carrier assembly.

TUNE-UP

CARBURETOR

Makes diagnosis of engine performance.
Tests, repairs, and adjusts automatic choke.
Inspects and repairs or replaces temperature sensor.
Tests and repairs heated air intake system.
Tests and replaces hot idle compensator valve.
Removes, overhauls, and replaces carburetor.
Tests, repairs, and adjusts carburetor controls.
Tests and replaces manifold heat control valve.
Makes curb idle and throttle solenoid adjustment.
Interprets schematic of an electronic fuel system.
Identifies the different types of fuel injection systems.
Makes diagnosis, tests and services fuel injection system.
Makes diagnosis, tests and services diesel fuel injection system.

Inspects and replaces heater hoses.
Inspects and replaces control cables and switches.
Inspects, removes, and replaces defrost ducts.

BRAKE SYSTEM

Makes complete inspection of brake system.
Road tests and makes diagnosis of brake system.
Inspects and adds fluid to proper level.
Removes and replaces brake lines and hoses.
Bleeds hydraulic brake system.
Removes and replaces park brake linkage and adjusts park brake.
Removes, replaces, and overhauls wheel cylinder.
Inspects and turns brake drums.
Removes, overhauls, or replaces master cylinder.
Adjusts drum brakes.
Relines drum brakes.
Relines disc-type brakes.
Refaces disc brake rotors.
Removes, replaces, and overhauls caliper assembly.
Inspects and tests power brake operation.

STEERING AND SUSPENSION

STEERING

Inspects and makes diagnosis of steering problems.
Removes and replaces power steering lines.
Removes and replaces power steering pump.
Removes, replaces, and adjusts manual steering gear assembly.
Removes, replaces, and adjusts power steering gear assembly.
Removes and replaces idler arm, center link, and rod end.
Overhauls manual steering gear assembly.
Overhauls power steering unit.
Overhauls steering pump.
Lubricates steering system.
Services power steering system.

SUSPENSION

Rotates tires.
Balances tires.
Lubricates front suspension.
Inspects and makes diagnosis of wear and alignment problems.
Removes, inspects, cleans, replaces, and repacks front wheel bearing and seals.
Aligns front end.
Removes and replaces shock absorbers.
Removes and replaces coil springs.
Removes and replaces torsion bar.

SUSPENSION (cont'd)

4 3 2 1

Removes and replaces leaf springs and spring shackles.
Removes and replaces lower and upper control arms.
Removes and replaces ball joints.
Removes and replaces stabilizers, strut bar, swag bar, and bushings.
Removes and replaces king pins.

ELECTRICAL SYSTEM

BATTERY

Cleans battery and cables.
Checks electrolyte level.
Performs hydrometer test.
Performs load test.
Performs charge test.
Performs cell probe test.
Charges batteries.

CHARGING SYSTEM

4 3 2 1

Removes and replaces alternator belt.
Tests alternator output.
Tests and sets voltage regulator.
Removes and replaces regulator.
Removes and replaces voltage regulator.
Rebuilds alternator.

STARTING SYSTEM

Tests starting system.
Removes and replaces solenoid.
Removes and replaces starter motor.
Overhauls starter.
Removes and replaces ignition switch.
Tests and replaces neutral safety switch.

AUXILIARY SYSTEM

Reads and interprets schematic diagram.
Identifies wire gauge and color code identification.
Splices electrical wire.

AUXILIARY SYSTEM (cont'd)

4 3 2 1

Tests, removes, and replaces fuses, circuit breakers, and switches.
Performs operational inspection of lighting system.
Tests, removes, and replaces lights, connections, and sockets.
Replaces flasher units.
Tests, repairs, and replaces turn-signal unit.
Adjusts and replaces head lights.
Adjusts, repairs, and replaces back-up light switch.
Tests, removes, and replaces instrument gauges and warning lamps.
Removes and replaces gauge sending units: oil, fuel, and temperature.
Replaces or repairs fuse block assembly.
Tests and repairs horn circuit.
Replaces chassis wiring.
Repairs windshield wiper mechanisms and controls.
Removes and repairs radio speakers and wiring.
Removes and replaces fan/blower motor.
Tests, removes, and replaces cruise control.

ESSENTIAL ELEMENTS FOR ALL VOCATIONAL PROGRAMS

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4 3 2 1

Identifies characteristics and responsibilities of leaders
Demonstrates characteristics and responsibilities of group members
Participates in meetings according to rules of parliamentary procedures
Functions effectively on committees by accepting assigned responsibilities
Plans and conducts effective group leadership activities
Participates in society in a democratic way

4 3 2 1

Evaluates career options and employment opportunities
Demonstrates ability to complete job application, interview and follow-up
Follows written and oral instructions to complete job task
Demonstrates punctuality and dependability
Follows rules, standards, and policies of the work place
Demonstrates the ability to work cooperatively with others

4 3 2 1

Demonstrates responsibility in completing job tasks
Exhibits work habits and attitudes that increase productivity
Recognizes opportunities and options for business ownership
Identifies entry level procedures and planning processes needed to open a business
Utilizes terms associated with small business
Recognizes the role of small business in the free enterprise system

COMPETENCY PROFILE

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Address _____ Age _____ Date of Birth _____ Sex _____

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Method of Instruction	Grade	Enrollment Date	Withdrawal Date	Completion Date	Total Class Hours	Total Laboratory Hours	Total On-the-job Training Hours	Instructor

ON-THE-JOB TRAINING/WORK EXPERIENCE

Duration of Employment	Job Title	Supervisor's Name	Training Station	Address of Employer	Phone

FOLLOW-UP RECORD

Date	Current Address	Ed. Status	Educational Institution	Educational Objective
		☐ Attending ☐ Not Attending		

Not in Labor Force	Un-employed	Military Status	Employed	Employer	Address	Supervisor	Position	Related to Training	Salary
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BEST COPY AVAILABLE

AUTO BODY REPAIRER

JOB COMPETENCIES

DIRECTIONS: Evaluate the student using the rating scale below. Check the appropriate number to indicate the degree of competency. The rating for each of the tasks should reflect job readiness rather than the grade earned in the class.

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OXYACETYLENE CUTTING AND WELDING

4321

- ☐☐☐☐ Installs regulators and hoses on cylinders.
- ☐☐☐☐ Maintains, adjusts, and shuts down equipment.
- ☐☐☐☐ Sets up and tests equipment for leaks.
- ☐☐☐☐ Selects cutting tips for jobs.
- ☐☐☐☐ Prepares materials for cutting.
- ☐☐☐☐ Adjusts regulators for cutting metals.
- ☐☐☐☐ Adjusts flame and cuts metal.
- ☐☐☐☐ Makes outside corner weld by fusion.
- ☐☐☐☐ Tests fusion welds.
- ☐☐☐☐ Butt welds automotive sheet metal.
- ☐☐☐☐ Lap welds automotive sheet metal.
- ☐☐☐☐ Lights and adjusts flame for brazing.
- ☐☐☐☐ Prepares materials for brazing.
- ☐☐☐☐ Brazes sheet metal coupons.
- ☐☐☐☐ Braze welds square butt joint.
- ☐☐☐☐ Braze welds lap joint.
- ☐☐☐☐ Makes fillet weld with brass.
- ☐☐☐☐ Tests braze welds.
- ☐☐☐☐ Makes proper solder applications.

ELECTRICAL SYSTEM

- ☐☐☐☐ Identifies safety factors in electrical systems.
- ☐☐☐☐ Tests and services storage batteries.
- ☐☐☐☐ Tests headlight circuits.
- ☐☐☐☐ Tests turn signal circuits.
- ☐☐☐☐ Tests stop light circuits.
- ☐☐☐☐ Tests windshield wiper motors.
- ☐☐☐☐ Tests electric window circuits.
- ☐☐☐☐ Checks wiring in air conditioning circuits.
- ☐☐☐☐ Checks ignition system wiring.

REFINISHING

4321

- ☐☐☐☐ Analyzes automotive paint problems.
- ☐☐☐☐ Identifies safety factors for power tools.
- ☐☐☐☐ Identifies types of automotive finishes.
- ☐☐☐☐ Identifies methods and procedures for different jobs.
- ☐☐☐☐ Mixes and matches enamel and lacquer.
- ☐☐☐☐ Paints with spray gun.
- ☐☐☐☐ Sands and masks area for refinishing.
- ☐☐☐☐ Prepares for spot undercoat.
- ☐☐☐☐ Applies spot undercoat.
- ☐☐☐☐ Prepares spot for finish coat.
- ☐☐☐☐ Applies spot repair finish coat using acrylic lacquer.
- ☐☐☐☐ Applies spot repair finish coat using enamel.
- ☐☐☐☐ Prepares surface for complete panel refinishing.
- ☐☐☐☐ Identifies condition of paint on panel.
- ☐☐☐☐ Makes panel repair topcoat application with lacquer.
- ☐☐☐☐ Makes panel repair topcoat application with enamel.
- ☐☐☐☐ Color sands and compounds painted areas.
- ☐☐☐☐ Prepares surface for overall topcoat refinish.
- ☐☐☐☐ Applies and finishes overall topcoat with acrylic lacquer.
- ☐☐☐☐ Applies and finishes overall topcoat with enamel.
- ☐☐☐☐ Identifies cause and corrects painting problems.

STEERING AND SUSPENSION

- ☐☐☐☐ Removes and replaces wheels.
- ☐☐☐☐ Rotates tires.
- ☐☐☐☐ Repacks wheel bearings.
- ☐☐☐☐ Lubricates steering and suspension systems.
- ☐☐☐☐ Repairs tie rod ends.
- ☐☐☐☐ Removes and replaces shock absorbers.
- ☐☐☐☐ Overhauls coil spring type front suspension.
- ☐☐☐☐ Overhauls torsion bar type front suspension.
- ☐☐☐☐ Removes and replaces ball joints.
- ☐☐☐☐ Aligns front end.

SYNTHETICS

4321

- ☐☐☐☐ Describes safety precautions in fiberglass work.
- ☐☐☐☐ Tests synthetics for identification.
- ☐☐☐☐ Repairs minor cracks using fiberglass.
- ☐☐☐☐ Repairs major damage using fiberglass.
- ☐☐☐☐ Removes and replaces plastic parts.
- ☐☐☐☐ Repairs minor damage with adhesive.
- ☐☐☐☐ Makes repairs using hot air plastic welder.
- ☐☐☐☐ Makes repairs using semiautomatic speed welder.
- ☐☐☐☐ Mixes colors of liquid vinyl to match original.
- ☐☐☐☐ Repairs minor damage with liquid vinyl.
- ☐☐☐☐ Repairs major damage with liquid vinyl.
- ☐☐☐☐ Removes and replaces directly cemented vinyl roof covers.
- ☐☐☐☐ Removes and replaces foam padded vinyl roof covers.
- ☐☐☐☐ Removes and replaces decals.
- ☐☐☐☐ Repairs wood-grain overlays.
- ☐☐☐☐ Removes and replaces wood-grain overlays.

FRAME REPAIR

- ☐☐☐☐ Identifies safety procedures in frame repairs.
- ☐☐☐☐ Identifies tools and machines used in frame repairs.
- ☐☐☐☐ Identifies types of frames.
- ☐☐☐☐ Prepares vehicle for repair.
- ☐☐☐☐ Diagnoses type of damage.
- ☐☐☐☐ Repairs conventional frame front impact damage.
- ☐☐☐☐ Repairs front end sway damage.
- ☐☐☐☐ Repairs front end frame sag.
- ☐☐☐☐ Repairs front end frame mash.
- ☐☐☐☐ Repairs diamond shape frame damage.
- ☐☐☐☐ Repairs combination frame damage.
- ☐☐☐☐ Prepares unitized body vehicle for repair.
- ☐☐☐☐ Diagnoses type of damage on unitized frame.
- ☐☐☐☐ Repairs front end damage on unitized frame.
- ☐☐☐☐ Repairs frame with front drive engine.
- ☐☐☐☐ Reinforces frame.

METAL REPAIR

- Describes basic operations of collision repair.
- Identifies safety procedures in metal repair.
- Analyzes sheet metal damage.
- Plans sheet metal repair procedure.
- Repairs minor dent without filler.
- Repairs minor dent with polyester filler.
- Aligns body openings and adjusts panels.
- Repairs buckled fender or quarterpanel.
- Repairs dent using pull rod.
- Repairs rockerpanel gouge.
- Repairs rusted out sheet metal in door panel.
- Repairs front fender with collapsed hinge buckle damage.
- Repairs hood with collapsed rolled buckle damage.
- Repairs buckled roof panel.
- Repairs quarterpanel gouge and buckle.
- Uses heat shrink method to repair hail damage.
- Repairs inner body damage.
- Removes and replaces complete quarterpanel.
- Sections in quarterpanel.
- Removes and replaces door.
- Removes and replaces door skin.
- Removes and replaces bolted on fender.
- Removes and replaces seamed fender.
- Repairs and adjusts tailgates, liftgates, and sun roofs.

MISCELLANEOUS

- Describes automobile body construction.
- Prepares estimates and bids on jobs.
- Makes body panel adjustments.
- Repairs and adjusts moveable body parts.
- Repairs auto body trim.
- Repairs seats, seat belts, and interior trim.

GLASS WORK

- Describes safety gear for working with glass.
- Identifies auto glass tools and their uses.
- Describes special materials used.
- Identifies safety hazards and precautions.
- Replaces vent window glass.
- Replaces stationary quarter windows.
- Adjusts door glass.
- Replaces window glass in hardtop.
- Replaces window glass in closed-door style.
- Replaces window glass regulator in hardtop.
- Replaces window glass regulator in closed-door style.
- Replaces door glass - vent type.
- Replaces door glass - ventless type.
- Replaces windshield with weatherstrip installation.
- Replaces rear glass with weatherstrip installation.
- Replaces windshield with butyl sealant installation.
- Replaces rear glass with butyl sealant installation.
- Tests for and repairs leaks.

ARC AND SPOT WELDING

- Identifies safety procedures for arc welding.
- Services and adjusts welding machine.
- Selects electrodes to match jobs.
- Identifies and prepares materials.
- Runs beads on flat metal.
- Welds in flat position.
- Welds in vertical, horizontal, and overhead positions.
- Welds sheet metal.
- Welds frame.
- Welds butt, lap, and edge joints.
- Prepares surfaces for spot welding.
- Makes arc spot welds.
- Makes resistance spot welds.
- Operates spot welding machines:
  - a.
  - b.
  - c.
- Shuts down and secures equipment.

AIR CONDITIONER REPAIR

- Identifies safety factors in air conditioner repair.
- Tests air conditioning for leaks with halide.
- Checks evaporators for restricted air flow.
- Checks oil level.
- Checks receiver - drier units with foam.
- Checks thermostatic expansion valves.
- Performance tests air conditioners.
- Checks receiver - driers for moisture.
- Checks condensers for air restrictions.
- Removes and replaces evaporators.
- Removes and replaces compressors.
- Removes and replaces receiver - driers.
- Removes and replaces condensers.
- Removes and replaces thermostatic expansion valves.
- Connects manifold gauge set to systems.
- Purges the systems.
- Evacuates the systems.
- Charges the systems with engine off.
- Charges the systems with engine running.

Competencies Related to Essential Elements are in Bold Print

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				Functions effectively on committees by accepting assigned responsibilities
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4	3	2	1	
				Evaluates career options and employment opportunities
				Demonstrates ability to complete job application, interview and follow-up
				Follows written and oral instructions to complete job task
				Demonstrates punctuality and dependability
				Follows rules, standards, and policies of the work place
				Demonstrates the ability to work cooperatively with others

4	3	2	1	
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				Recognizes opportunities and options for business ownership
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ON-THE-JOB TRAINING/WORK EXPERIENCE

Duration of Employment	Job Title	Supervisor's Name	Training Station	Address of Employer	Phone

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Date	Current Address	Ed. Status	Educational Institution	Educational Objective
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CARPENTRY

JOB COMPETENCIES

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BASIC SKILLS

4 3 2 1

- ☐☐☐☐ Reads and interprets blueprints.
- ☐☐☐☐ Writes, speaks, communicates effectively.
- ☐☐☐☐ Applies printed matter to job.
- ☐☐☐☐ Performs general mathematical calculations.
- ☐☐☐☐ Applies computations to job related problems.
- ☐☐☐☐ Estimates material sizes, quantities.
- ☐☐☐☐ Composes bills of material.
- ☐☐☐☐ Displays skill in the selection, proper use, and care of measuring and layout tools.
- ☐☐☐☐ Prepares layouts, measures and marks material to acceptable degrees of accuracy.
- ☐☐☐☐ Checks layouts for accuracy.
- ☐☐☐☐ Selects appropriate hand/power tools for job.
- ☐☐☐☐ Demonstrates skill in use, care of carpenter's hand tools.
- ☐☐☐☐ Demonstrates skill in use, care of carpenter's power tools.
- ☐☐☐☐ Exhibits proper tool safety in use and handling.
- ☐☐☐☐ Observes personal, job safety procedures.
- ☐☐☐☐ Identifies, reports potential safety hazards.
- ☐☐☐☐ Follows acceptable building practices, procedures.
- ☐☐☐☐ Utilizes time, material efficiently.

WALL FRAMING

4 3 2 1

- ☐☐☐☐ Reads, interprets door/window schedules.
- ☐☐☐☐ Reads, interprets manufacturer's instructions.
- ☐☐☐☐ Identifies type wall framing.
- ☐☐☐☐ Identifies types of doors/windows.
- ☐☐☐☐ Lays out and marks sole plate locations.
- ☐☐☐☐ Lays out, cuts sole, single top plate to size.
- ☐☐☐☐ Installs sole weather seal.
- ☐☐☐☐ Positions and secures sole plates.
- ☐☐☐☐ Lays out and marks sole, single top plate to receive vertical frame members.
- ☐☐☐☐ Constructs corner posts.
- ☐☐☐☐ Positions, secures, and temporarily braces corner posts.
- ☐☐☐☐ Installs single top plates, full studs.
- ☐☐☐☐ Constructs and installs partition "T"s.
- ☐☐☐☐ Constructs a built-up header.
- ☐☐☐☐ Cuts trimmers/cripples to length.
- ☐☐☐☐ Rough frames door openings.
- ☐☐☐☐ Rough frames window openings.
- ☐☐☐☐ Constructs a trussed header.
- ☐☐☐☐ Frames small wall openings.
- ☐☐☐☐ Pre-fabs partition wall frames.
- ☐☐☐☐ Positions, erects, and temporarily braces partition walls, wall sections.
- ☐☐☐☐ Plumbs and assembles wall sections, partitions.
- ☐☐☐☐ Installs double top plate.
- ☐☐☐☐ Installs let-in braces.
- ☐☐☐☐ Installs set-in braces.
- ☐☐☐☐ Sheathes outside walls with plywood.
- ☐☐☐☐ Sheathes outside walls with thermo-bar, other insulating panels.

STAIR FRAMING

4 3 2 1

- ☐☐☐☐ Identifies stair types, styles.
- ☐☐☐☐ Calculates stair unit rise, unit run.
- ☐☐☐☐ Lays out and cuts stair stringers.
- ☐☐☐☐ Frames and braces stair landing.
- ☐☐☐☐ Positions and secures stair stringers.
- ☐☐☐☐ Installs riser plates and stair treads.

ROOFING

- ☐☐☐☐ Identifies types of roofing materials.
- ☐☐☐☐ Installs drip edge, eave flashing.
- ☐☐☐☐ Installs builder's felt underlayment.
- ☐☐☐☐ Installs valley flashing, wall flashing.
- ☐☐☐☐ Installs roof vent, chimney flashing.
- ☐☐☐☐ Installs asphalt composition roll roofing.
- ☐☐☐☐ Installs asphalt composition 2 - 3 tab strip shingle roof.
- ☐☐☐☐ Installs wood shingle roof.

SITE PREPARATION

- Locates, marks property corner boundaries.
- Checks, complies with local codes, ordinances.
- **Rough locates building on site.**
- Identifies, marks unwanted growth, objects for clearing.
- **Sets grade stakes.**
- Oversees clearing, grading.
- Prepares sub-grade to receive foundations.
- Locates existing utilities; sets service pole.

FOUNDATIONS

- **Locates and sets building corner hubs.**
- **Constructs batterboards and sets stringlines.**
- Performs special excavation as required.
- Calculates concrete requirements.
- **Selects form material size and type.**
- **Constructs form panels.**
- **Positions and assembles forms.**
- **Levels and aligns forms.**
- **Braces forms.**
- **Installs form blockouts, knockouts, keyways.**
- Positions anchor bolts.
- Removes and cleans foundation forms.

FLOOR FRAMING

- **Cuts and installs termite shields.**
- **Constructs an "L" type box sill.**
- **Constructs a built-up girder.**
- **Lays out and marks sills and girders to receive floor joists.**
- **Measures and cuts floor joists to size.**
- **Positions and secures floor joists.**
- **Identifies types of bridging.**
- **Cuts bridging to size.**
- Installs wood solid bridging.
- **Installs wood cross bridging.**
- Installs metal cross bridging.
- **Frames floor openings.**
- Lays plank subfloor square to joists.
- **Lays plank subfloor diagonal to joists.**
- **Lays plywood subfloor.**

CEILING FRAMING

- **Lays out and marks top plates to receive ceiling joists.**
- **Lays out and cuts joists to size; ends to match rafter slope.**
- **Installs ceiling joists.**
- **Installs stub joists along end wall overhangs.**
- **Frames ceiling openings.**
- **Installs bridging.**
- **Installs blocking.**

ROOF FRAMING

- Identifies roof types.
- **Reads, interprets rafter tables in the selection (size and material) of rafters.**
- **Calculates rafter lengths using rise and run.**
- **Lays out and marks top plates, ridgeboard to receive rafters.**
- **Lays out and cuts common rafters.**
- **Constructs/erects common rafters and ridgeboard.**
- **Temporarily braces roof construction.**
- **Frames gable end wall.**
- **Frames extended roof rake on gabled roof.**
- Constructs pre-fab trussed rafters.
- **Installs trussed rafters.**
- **Lays out and cuts hip rafters.**
- **Installs hip rafters.**
- **Lays out and cuts valley rafters.**
- **Installs valley rafters.**
- **Lays out and cuts hip jacks.**
- **Installs hip jacks.**
- **Lays out and cuts valley jacks.**
- **Installs valley jacks.**
- **Braces roof frame.**
- **Frames small roof openings.**
- **Frames chimney opening.**
- **Frames dormer opening.**
- **Frames shed type dormer.**
- **Frames gable type dormer.**
- **Installs plywood roof sheathing.**
- **Installs open board strip sheathing.**

EXTERIOR TRIM AND FINISH

- **Applies shake/shingle siding.**
- **Applies horizontal wood siding.**
- **Applies vertical wood siding.**
- **Applies plywood/hardboard panel siding.**
- Applies aluminum and/or vinyl siding.
- **Erects and/or constructs scaffolds.**
- **Practices scaffold/ladder safety.**
- **Constructs a snub cornice.**
- **Constructs a box cornice and rake.**
- **Installs cornice mold and trim.**
- **Installs outside/inside corner mold.**
- Reads, interprets door/window schedules.
- Identifies window/exterior door types.
- **Frames, installs a fixed window unit.**
- **Installs preassembled window/casement unit.**
- **Frames, installs sliding glass door unit.**
- **Frames and installs exterior door casing.**
- **Fits, hangs exterior door and installs lock.**
- **Finish trims exterior doors, windows.**

INTERIOR TRIM AND FINISH

- **Installs plywood wall panels.**
- **Installs hardwood strip floor on wood subfloor.**
- **Installs hardwood strip floor on concrete subfloor.**
- **Installs wood plank floor on wood subfloor.**
- **Installs wood plank floor on concrete subfloor.**
- **Installs wood block (parquet) floor.**
- **Constructs and installs interior door casing.**
- **Hangs interior door and installs lock.**
- **Installs bi-fold door unit.**
- **Installs accordian door unit.**
- **Installs closet shelving and clothing bar.**
- **Constructs and installs linen cabinet.**
- **Installs prefab kitchen cabinets.**
- Installs built-in appliances.
- Constructs supports and places bathtub.
- **Installs base, ceiling, and wall molding.**

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				Demonstrates ability to complete job application, interview and follow-up
				Follows written and oral instructions to complete job task
				Demonstrates punctuality and dependability
				Follows rules, standards, and policies of the work place
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Duration of Employment	Job Title	Supervisor's Name	Training Station	Address of Employer	Phone

FOLLOW-UP RECORD

Date	Current Address	Ed Status	Educational Institution	Educational Objective
		☐ Attending ☐ Not Attending		

Not in Labor Force	Un-employed	Military Status	Employed	Employer	Address	Supervisor	Position	Related to Training	Salary
								☐Yes ☐No	

BRICKLAYING

JOB COMPETENCIES

DIRECTIONS: Evaluate the student using the rating scale below. Check the appropriate number to indicate the degree of competency. The rating for each of the tasks should reflect job readiness rather than the grade earned in the class.

RATING SCALE:
4 Skilled - can work independently with no supervision
3 Moderately skilled - can perform job completely with limited supervision
2 Limited skill - requires instruction and close supervision
1 No exposure - no experience or knowledge in this area

RELATED TECHNICAL

4321

- ☐☐☐☐ Reads, interprets blueprints and specifications.
- ☐☐☐☐ Reads, applies printed matter to job.
- ☐☐☐☐ Exhibits knowledge of language of the trade.
- ☐☐☐☐ Performs general mathematical calculations.
- ☐☐☐☐ Calculates areas, volumes, weights, percent.
- ☐☐☐☐ Identifies brick, masonry products by size and shape, type material.
- ☐☐☐☐ Explains ASTM classifications of concrete masonry, their purpose and principal uses.
- ☐☐☐☐ Recognizes standard brick courses; bonds.
- ☐☐☐☐ Differentiates between common and face brick.
- ☐☐☐☐ Calculates course heights; lengths.
- ☐☐☐☐ Estimates brick/masonry quantity requirements.
- ☐☐☐☐ Composes Bills of Material.
- ☐☐☐☐ Explains differences, major uses of ASTM types M, S, N and O mortars.
- ☐☐☐☐ Identifies ASTM mortar types M, S, N and O by ratio of proportions.

BASIC SKILLS

4321

- ☐☐☐☐ Cuts brick to size using brick set.
- ☐☐☐☐ Splits brick using brick hammer.
- ☐☐☐☐ Clips brick to size using brick trowel.
- ☐☐☐☐ Cuts masonry product to size using a portable abrasive mason's saw.
- ☐☐☐☐ Cuts masonry product to size using stationary table type mason's saw.
- ☐☐☐☐ Wets to temper and/or otherwise maintains brick stockpile.
- ☐☐☐☐ Displays skill in the selection, proper use, and care of mason's tools and equipment.
- ☐☐☐☐ Makes, takes accurate measurements using steel tape, folding rule.
- ☐☐☐☐ Lays dry stretcher course to test the bond (length).
- ☐☐☐☐ Works mortar with trowel to temper.
- ☐☐☐☐ Spreads mud, trowels furrow for bed joints.
- ☐☐☐☐ Butters sides, ends of brick for head joints.
- ☐☐☐☐ Designs, employs story pole.
- ☐☐☐☐ Lays up corners to rack the lead.
- ☐☐☐☐ Sets mason's stringline for course guides.
- ☐☐☐☐ Positions, presses brick into place forming solid joints.
- ☐☐☐☐ Lays courses to line.
- ☐☐☐☐ Installs weep holes in cavity walls and brick veneer.
- ☐☐☐☐ Installs metal clips and ties to reinforce masonry construction.
- ☐☐☐☐ Employs mason's rule to level, plumb walls true and out-of-wind.
- ☐☐☐☐ Checks corners for square using framing square.
- ☐☐☐☐ Removes excess mortar from joints using trowel.
- ☐☐☐☐ Tools joints using pointing trowel.
- ☐☐☐☐ Tools joints using jointer.
- ☐☐☐☐ Parges masonry walls for backing course; to moisture proof.
- ☐☐☐☐ Cleans new masonry construction of efflorescence.
- ☐☐☐☐ Cleans, repoints deteriorated/weather masonry joints.
- ☐☐☐☐ Keeps work area clean, clear of tools, materials.
- ☐☐☐☐ Cleans, maintains mortarboard, bucket, hand tools.
- ☐☐☐☐ Uses time-motion effectively.

BRICK MASONRY

4321

- ☐☐☐☐ Lays out, builds simple 4" all stretcher wall.
- ☐☐☐☐ Lays out, builds 8" common bond wall.
- ☐☐☐☐ Lays out, builds 12" common bond wall incorporating header courses every sixth course.
- ☐☐☐☐ Lays out, builds 8" Flemish bond wall.
- ☐☐☐☐ Lays out, builds 8" English bond wall.
- ☐☐☐☐ Lays out, builds 8" Dutch bond wall.
- ☐☐☐☐ Lays out, builds 4" all stretcher veneer wall on a large radius.
- ☐☐☐☐ Lays up a 4" all stretcher return corner 90°.
- ☐☐☐☐ Lays up an 8" common bond return corner 90°.
- ☐☐☐☐ Lays up a 12" Dutch bond return corner 90°.
- ☐☐☐☐ Lays up a quoined brick corner 90°.
- ☐☐☐☐ Lays out, builds a 12" x 12" hollow brick pier.
- ☐☐☐☐ Lays out, builds a 12" x 16" hollow brick pier.
- ☐☐☐☐ Lays out, builds a 16" x 20" hollow brick pier.
- ☐☐☐☐ Lays out, builds a 20" x 24" hollow brick pier.
- ☐☐☐☐ Lays out, builds 12" all stretcher cavity wall reinforced with metal ties, capped with bond stones.
- ☐☐☐☐ Incorporates basket weave pattern in all stretcher wall.
- ☐☐☐☐ Incorporates herringbone pattern in common bond wall.
- ☐☐☐☐ Lays in and frames window opening in brick veneer wall.
- ☐☐☐☐ Lays in tilted soldier course for window sills.
- ☐☐☐☐ Constructs reinforced brick masonry lintel over window opening.
- ☐☐☐☐ Incorporates structural steel lintels in brick veneer masonry.
- ☐☐☐☐ Incorporates 8" x 12" pilaster in brick wall.
- ☐☐☐☐ Incorporates vertical chase in brick wall.
- ☐☐☐☐ Incorporates horizontal chase in brick wall.
- ☐☐☐☐ Lays out, builds brick masonry fireplace according to plans and details.
- ☐☐☐☐ Incorporates brick masonry mantel using a five-course corbel.
- ☐☐☐☐ Batters firebox exterior to chimney exterior as per details.
- ☐☐☐☐ Constructs two-flue chimney with precast top.
- ☐☐☐☐ Lays up, builds Two Rowlock Segmental Arch in 8" wall using a temporary wood center.
- ☐☐☐☐ Lays up, builds Soldier Course Semicircular Arch using a temporary wood center.

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SAFETY

- **Wears appropriate safety apparel.**
- **Follows acceptable building practices, procedures.**
- **Observes safety signs, color codes.**
- Identifies, reports potential safety hazards.
- Reads, follows manufacturer's instructions, warnings.
- **Exercises proper technique for lifting, carrying.**
- Constructs/erects, levels, braces building scaffolds.
- **Practices scaffold, ladder safety.**
- **Selects correct hand/power tools for the job.**
- **Demonstrates tool safety in use and handling.**
- **Keeps work space clear of tools and materials.**
- **Utilizes time, material efficiently.**

CONCRETE BLOCK MASONRY

- **Identifies types of concrete masonry by type, size, shape.**
- **Lays out dry base course to test the bond (length).**
- **Cuts concrete block masonry to size using power masonry saws and/or abrasive discs.**
- **Spreads mud, trowels furrows for bed joints.**
- **Butters ends of face shells for concrete masonry head joints.**
- **Positions blocks-presses blocks firmly to line and grade forming tight joints.**
- **Lays up corners to rack the lead.**
- **Selects, employs special sizes, shapes as required to frame doors and windows.**
- **Lays out, incorporates concrete block pilasters as indicated in plans and details.**
- **Lays up special textured concrete masonry blocks forming desired patterns and/or textures.**
- **Incorporates metal ties and reinforcement steel in concrete masonry construction as called for by plans and specifications.**

STONE MASONRY

- Identifies the various types of material stone employed in stone masonry.
- Sizes, selects each stone to be employed in stone masonry construction.
- Constructs, lays up uncoursed rubble wall as per plans and details.
- Constructs, lays up coursed, bonded rubble stone wall.
- Constructs, lays up quarried stone wall in coursed ashlar pattern.

STONE PANELS

- Constructs/pre-fabs stone panels to design dimensions and specifications.
- Drills anchor slots or holes as required.
- Transports stone panels to building site.
- Erects special scaffolds for panel installation as required.
- Positions and aligns stone panels to building.
- Welds stone panel anchors to building steel framework.

MORTAR

- Screens and grades aggregates.
- **Measures ingredients for specified mortar amounts.**
- **Proportions ingredients for specified mortar types.**
- **Hand mixes mortar to desired consistency.**
- **Adds color (dye) to mortar as specified.**
- **Employs admixtures to mortar as dictated by conditions.**
- Delivers mortar to mason's mortar board.
- Cleans, maintains mixing box, hoe, equipment.
- Operates portable power mixer.
- Observes safe operating procedures for power mixers.
- Cleans and maintains portable power mixers.

Competencies Related to Essential Elements are in Bold Print

ESSENTIAL ELEMENTS FOR ALL VOCATIONAL PROGRAMS

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RATING SCALE:
4 Skilled—can work independently with no supervision
3 Moderately skilled—can perform job completely with limited supervision
2 Limited skill—requires instruction and close supervision
1 No exposure—no experience or knowledge in this area

4	3	2	1	
				Identifies characteristics and responsibilities of leaders
				Demonstrates characteristics and responsibilities of group members
				Participates in meetings according to rules of parliamentary procedures
				Functions effectively on committees by accepting assigned responsibilities
				Plans and conducts effective group leadership activities
				Participates in society in a democratic way

4	3	2	1	
				Evaluates career options and employment opportunities
				Demonstrates ability to complete job application, interview and follow-up
				Follows written and oral instructions to complete job task
				Demonstrates punctuality and dependability
				Follows rules, standards, and policies of the work place
				Demonstrates the ability to work cooperatively with others

4	3	2	1	
				Demonstrates responsibility in completing job tasks
				Exhibits work habits and attitudes that increase productivity
				Recognizes opportunities and options for business ownership
				Identifies entry level procedures and planning processes needed to open a business
				Utilizes terms associated with small business
				Recognizes the role of small business in the free enterprise system

COMPETENCY PROFILE

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Address _____ Age _____ Date of Birth _____ Sex _____

Racial/Ethnic Designation _____ Special Needs _____

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Method of Instruction	Grade	Enrollment Date	Withdrawal Date	Completion Date	Total Class Hours	Total Laboratory Hours	Total On-the-job Training Hours	Instructor

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Duration of Employment	Job Title	Supervisor's Name	Training Station	Address of Employer	Phone

FOLLOW-UP RECORD

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Not in Labor Force	Un-employed	Military Status	Employed	Employer	Address	Supervisor	Position	Related to Training	Salary
								☐Yes ☐No	

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COMMERCIAL ARTIST

JOB COMPETENCIES

DIRECTIONS: Evaluate the student using the rating scale below. Check the appropriate number to indicate the degree of competency. The rating for each of the tasks should reflect job readiness rather than the grade earned in the class.

RATING SCALE:
4 Skilled - can work independently with no supervision
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BASIC MEDIA AND FORMS

4321

- ☐☐☐☐ Illustrates with pencils.
- ☐☐☐☐ Demonstrates lithograph crayon technique.
- ☐☐☐☐ Illustrates with pastels.
- ☐☐☐☐ Makes ink drawings with pens.
- ☐☐☐☐ Makes ink drawings with brushes.
- ☐☐☐☐ Demonstrates knowledge of "wash" technique and procedures.
- ☐☐☐☐ Selects media for opaque illustrations.
- ☐☐☐☐ Makes gouache illustrations.
- ☐☐☐☐ Demonstrates casein technique.
- ☐☐☐☐ Illustrates with acrylic polymer.
- ☐☐☐☐ Illustrates with vinyl polymer.
- ☐☐☐☐ Creates realistic illusions of depth with cubes.
- ☐☐☐☐ Creates realistic illusions of depth with cylinders.
- ☐☐☐☐ Draws and shades cones with correct light values.
- ☐☐☐☐ Draws and shades spheres with correct light values.
- ☐☐☐☐ Describes color relationships.

LETTERING

- ☐☐☐☐ Defines letter types and uses.
- ☐☐☐☐ Selects and prepares tools and materials for lettering.
- ☐☐☐☐ Describes lettering techniques.
- ☐☐☐☐ Letters using Gothic style.
- ☐☐☐☐ Handletters in Roman style.
- ☐☐☐☐ Handletters in script.
- ☐☐☐☐ Demonstrates understanding of type specifications.
- ☐☐☐☐ Chooses suitable type styles.

CARTOONING AND PRODUCTION

4321

- ☐☐☐☐ Discusses various elements of humor.
- ☐☐☐☐ Develops ideas for humorous situations.
- ☐☐☐☐ Draws spot-strip cartoons for reproduction.
- ☐☐☐☐ Renders cartoons of sport events.
- ☐☐☐☐ Does architectural drawings from floor plans.
- ☐☐☐☐ Illustrates furniture in ink wash.
- ☐☐☐☐ Prepares paste up copy for reproduction.
- ☐☐☐☐ Uses proportion scale for reductions and enlargements.
- ☐☐☐☐ Describes thumbnail, rough, composition and final stages.
- ☐☐☐☐ Produces finish work with accuracy.
- ☐☐☐☐ Demonstrates understanding of equipment use.
- ☐☐☐☐ Uses space relationships for best effect.

ENTREPRENEURSHIP

- ☐☐☐☐ Develops portfolio for display purposes.
- ☐☐☐☐ Prepares estimates for jobs.
- ☐☐☐☐ Accepts payment and writes receipts.
- ☐☐☐☐ Maintains records.
- ☐☐☐☐ Orders tools and supplies.
- ☐☐☐☐ Inventories materials.
- ☐☐☐☐ Identifies types of business organization.
- ☐☐☐☐ Describes sources of business capital.
- ☐☐☐☐ Designs functional commercial art studio.
- ☐☐☐☐ Creates persuasive advertisements.
- ☐☐☐☐ Demonstrates business promotion skills.
- ☐☐☐☐ Reviews marketing trends and market preferences.
- ☐☐☐☐ Creates specific items as assigned by customer or supervisor.
- ☐☐☐☐ Outlines advertising theory.

PERSPECTIVE AND COMPOSITION

- [ ] Defines concept of one point perspective.
- [ ] Illustrates scenes with one point perspective.
- [ ] Uses one point perspective to illustrate objects.
- [ ] Describes techniques and uses of two point perspective.
- [ ] Illustrates using two point perspective.

Demonstrates understanding of elements of design:

- [ ] a. repetition.
- [ ] b. weight.
- [ ] c. balance.
- [ ] d. direction.
- [ ] e. color.
- [ ] f. depth illusion.
- [ ] g. light and shadow value.
- [ ] h. arrangement.
- [ ] i. size.
- [ ] j. line.
- [ ] k. contrast.
- [ ] l. paper texture.

- [ ] Creates magazine sales advertisement layout.
- [ ] Selects special materials for poster work.

Designs forceful posters for advertising and informing:

- [ ] a. large posters for roadside.
- [ ] b. small posters for inside use.

Explains traditional, period, and contemporary design styles.

AIRBRUSH AND SCREEN PRINTING

- [ ] Describes types of airbrushes.
- [ ] Selects proper airbrushes for various jobs.
- [ ] Safely operates adjustable airbrush equipment.
- [ ] Checks and maintains airbrush equipment.
- [ ] Prepares and uses friskets for airbrush problems.
- [ ] Prepares and uses paper stencils.
- [ ] Prepares and prints with lacquer film silk screen.
- [ ] Prepares and uses silk screens with direct photo process.

ANATOMY AND CLOTHING

- [ ] Draws realistic small animals.
- [ ] Draws large animals.
- [ ] Illustrates wildlife from photographs.
- [ ] Illustrates wildlife from memory and/or live models.
- [ ] Draws infant faces.
- [ ] Illustrates faces of children.
- [ ] Illustrates full figures of children.
- [ ] Draws adolescent faces.
- [ ] Illustrates adolescent figures.
- [ ] Illustrates adult faces.
- [ ] Draws adult figures.
- [ ] Illustrates fashion figures with drapery folds.
- [ ] Renders textile textures to fashion figures.
- [ ] Illustrates realistic fur clothing.

Competencies Related to Essential Elements are in Bold Print

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ESSENTIAL ELEMENTS FOR ALL VOCATIONAL PROGRAMS

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1 No exposure – no experience or knowledge in this area

4	3	2	1	
				Identifies characteristics and responsibilities of leaders
				Demonstrates characteristics and responsibilities of group members
				Participates in meetings according to rules of parliamentary procedures
				Functions effectively on committees by accepting assigned responsibilities
				Plans and conducts effective group leadership activities
				Participates in society in a democratic way

4	3	2	1	
				Evaluates career options and employment opportunities
				Demonstrates ability to complete job application, interview and follow-up
				Follows written and oral instructions to complete job task
				Demonstrates punctuality and dependability
				Follows rules, standards, and policies of the work place
				Demonstrates the ability to work cooperatively with others

4	3	2	1	
				Demonstrates responsibility in completing job tasks
				Exhibits work habits and attitudes that increase productivity
				Recognizes opportunities and options for business ownership
				Identifies entry level procedures and planning processes needed to open a business
				Utilizes terms associated with small business
				Recognizes the role of small business in the free enterprise system

COMPETENCY PROFILE

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ELECTRICIAN

JOB COMPETENCIES

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4321 INSTALLATION OF WIRING

- [ ] Locates and marks location for service entrance panel.
- [ ] Locates and marks route for small appliance circuits.
- [ ] Locates and marks route for general purpose circuits.
- [ ] Locates and marks route for individual circuits.
- [ ] Identifies types and sizes of device and outlet boxes.
- [ ] Determines size of box and number of conductors allowed in a box.
- [ ] Identifies, selects, and installs switch and handy boxes.
- [ ] Identifies, selects, and installs outlet boxes.
- [ ] Determines route and provides access for non-metallic sheathed cable.
- [ ] Determines need and installs guard strips.
- [ ] Identifies types, sizes, and characteristics of cable and makes selection of cable.
- [ ] Unrolls cable and pulls cable through circuit route.
- [ ] Identifies, selects, and installs cable with connectors and clamps.
- [ ] Identifies and labels circuits at service entrance panel.
- [ ] Identifies and selects cable anchors and anchors cable.

4321 JOB ESTIMATION

- [ ] Makes detailed analysis of plans, specifications, materials, and labor requirements.
- [ ] Prepares a quick installation cost estimate.
- [ ] Determines current carrying capacity of circuits.
- [ ] Identifies and determines number of general purpose circuits.
- [ ] Identifies and determines number of small appliance circuits.
- [ ] Identifies and determines number of individual circuits.
- [ ] Divides wiring into general purpose circuits.
- [ ] Identifies structural parts of house.

ELECTRIC MOTORS

- [ ] Determines size and type of electric motor required.
- [ ] Selects proper mounting base for motor.
- [ ] Determines motor power factor and motor efficiency.
- [ ] Identifies and selects motor overload protection devices.
- [ ] Selects type motor drive and determines drive size.
- [ ] Troubleshoots, services, repairs, and installs single phase motor.
- [ ] Troubleshoots, services, repairs, and installs three phase motor.
- [ ] Troubleshoots and services capacitor start and repulsion type motors.
- [ ] Troubleshoots, repairs, and installs electric motor controls.
- [ ] Determines correct motor rotation and changes rotation.
- [ ] Determines size and type motor belt and installs belt.

4321 BASIC SKILLS

- [ ] Identifies and corrects or reports potential safety hazards and maintains safety work attitude.
- [ ] Demonstrates proper use and safety in working with power saws.
- [ ] Demonstrates ability to use service and parts manuals.
- [ ] Demonstrates ability to apply math as applied to the trade.
- [ ] Demonstrates ability to properly use and care for test equipment.
- [ ] Demonstrates ability to think through and solve problems related to the trade.
- [ ] Demonstrates ability to understand written and visual technical materials.
- [ ] Demonstrates knowledge in language of trade.
- [ ] Identifies, selects, and correctly uses hand tools.
- [ ] Demonstrates ability to read, interpret, and observe national and local electric codes.
- [ ] Demonstrates knowledge of basic theory of electricity.
- [ ] Explains processes of generation and distribution of electrical power.
- [ ] Demonstrates knowledge of the National Fire Protection Association and its purpose.
- [ ] Demonstrates knowledge of the Underwriters Laboratory and its purpose.

PRINT READING

- [ ] Identifies electrical symbols and abbreviations.
- [ ] Reads and interprets electrical prints.
- [ ] Traces route of circuit.
- [ ] Identifies the types of electrical circuits.

INSTALLATION OF SERVICE ENTRANCE EQUIPMENT

- [ ] Identifies, determines type and size of required service entrance panel.
- [ ] Installs the service entrance panel cabinet.
- [ ] Locates and installs service pole and service drop.
- [ ] Determines type of installation and installs service entrance cable or conduit and attachments.
- [ ] Connects service entrance conductors to service entrance panel terminals.
- [ ] Determines size and type of grounding connectors.
- [ ] Determines size and type of grounding electrode required.
- [ ] Connects grounding conductors and electrodes for wiring system ground.
- [ ] Identifies types and sizes of ground fault circuit interrupters (GFCI).
- [ ] Selects and installs permanent type GFCI's in receptacle or in service entrance panel.
- [ ] Connects 120v, 240v, 120/240v circuits with circuit breaker.
- [ ] Connects 120v, 240v, 120/240v circuits with fuses.

RURAL WIRING

- [ ] Determines size of wire and service equipment to install.
- [ ] Locates and wires meter pole.
- [ ] Wires service drops to buildings and service areas.
- [ ] Determines types of wire, wiring devices, boxes, and connectors and wires agricultural and utility buildings.
- [ ] Installs remote-control wiring.

CONNECTION OF CIRCUITS

- [ ] Prepares cable for connection in box.
- [ ] Identifies and selects wire connectors.
- [ ] Splices wire.
- [ ] Installs ground for system and circuits.
- [ ] Connects grounding to conductor enclosures and equipment.
- [ ] Identifies types and sizes of receptacles.
- [ ] Installs and connects duplex receptacles.
- [ ] Installs and connects appliance circuits.
- [ ] Identifies types of lighting fixtures and their method of mounting.
- [ ] Installs and connects lighting fixtures.
- [ ] Identifies types and sizes of switches.
- [ ] Installs and connects single-pole switches.
- [ ] Installs and connects switched-duplex receptacles.
- [ ] Installs and connects three-way switches.
- [ ] Installs and connects four-way switches.
- [ ] Installs and connects double-pole switches.
- [ ] Installs and connects combination switch and receptacle.
- [ ] Installs and connects chimes, doorbells, smoke detectors, and inter-com systems.
- [ ] Tests continuity of circuits to insure electrical compatibility and safety of component parts using test equipment.

INSTALLATION OF ELECTRICAL METALLIC CONDUIT

- [ ] Identifies the type and use of electrical metallic conduit - flexible and rigid.
- [ ] Cuts, bends, and installs electrical metallic conduit.
- [ ] Installs wiring in electrical metallic conduit.
- [ ] Identifies the types and uses of electrical metallic conduit connectors and fittings.
- [ ] Selects and installs conduit connectors and fittings.

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				Follows written and oral instructions to complete job task
				Demonstrates punctuality and dependability
				Follows rules, standards, and policies of the work place
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				Demonstrates responsibility in completing job tasks
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In Case of Emergency, Contact _____ Address _____ Home phone _____ Business phone _____

OR

Contact _____ Address _____ Home phone _____ Business phone _____

Method of Instruction	Grade	Enrollment Date	Withdrawal Date	Completion Date	Total Class Hours	Total Laboratory Hours	Total On-the-job Training Hours	Instructor

ON-THE-JOB TRAINING/WORK EXPERIENCE

Duration of Employment	Job Title	Supervisor's Name	Training Station	Address of Employer	Phone

FOLLOW-UP RECORD

Date	Current Address	Ed. Status	Educational Institution	Educational Objective
		☐ Attending ☐ Not Attending		

Not in Labor Force	Un-employed	Military Status	Employed	Employer	Address	Supervisor	Position	Related to Training	Salary
								☐Yes ☐No	

JOB COMPETENCIES

DIRECTIONS: Evaluate the student using the rating scale below. Check the appropriate number to indicate the degree of competency. The rating for each of the tasks should reflect job readiness rather than the grade earned in the class.

RATING SCALE:
4 Skilled - can work independently with no supervision
3 Moderately skilled - can perform job completely with limited supervision
2 Limited skill - requires instruction and close supervision
1 No exposure - no experience or knowledge in this area

safety

4 3 2 1
- ☐☐☐☐ Wears appropriate work clothing; safety apparel.
- ☐☐☐☐ Follows acceptable trade practices; procedures.
- ☐☐☐☐ Observes safety signs; color codes.
- ☐☐☐☐ Identifies; reports potential safety hazards.
- ☐☐☐☐ Exercises proper technique for lifting; carrying.
- ☐☐☐☐ Practices ladder; scaffold safety.
- ☐☐☐☐ Selects correct hand/power tool for the job.
- ☐☐☐☐ Displays skill in the proper use and care of tools and equipment.
- ☐☐☐☐ Keeps work space clear of tools and materials.
- ☐☐☐☐ Exercises extreme caution working around electric lines, equipment.
- ☐☐☐☐ Uses extreme care in handling acids/chemicals not to make contact with skin or eyes.
- ☐☐☐☐ Employs appropriate safety when working with flammable gases/liquids.
- ☐☐☐☐ Practices fire safety in operation of heating equipment/working with hot materials.
- ☐☐☐☐ Utilizes time, material efficiently.

basic skills

- ☐☐☐☐ Identifies pipe by size, type material, and type make-up (joint connection).
- ☐☐☐☐ Identifies pipe fittings by function, size, make-up,material.
- ☐☐☐☐ Identifies valves by type, size, and material.
- ☐☐☐☐ Measures pipe to required length to make pipe run according to blueprints, and marks for cutting.
- ☐☐☐☐ Cuts cast iron soil pipe cleanly, squarely, using hammer and cold chisel.
- ☐☐☐☐ Cuts cast iron pipe to length using a cast iron pipe cutter.
- ☐☐☐☐ Lights and adjusts portable furnace to melt lead.

related

4 3 2 1
- ☐☐☐☐ Performs general mathematical calculations.
- ☐☐☐☐ Calculates areas, volumes, weights, pressures, flow (g.p.m.).
- ☐☐☐☐ Converts forms of measure: feet, inches, fractions, decimals.
- ☐☐☐☐ Totals accumulative dimensions.
- ☐☐☐☐ Applies math to job related problem solving.
- ☐☐☐☐ Reads, interprets architectural blueprints and specifications.
- ☐☐☐☐ Recognizes plumbing fixture symbols.
- ☐☐☐☐ Identifies piping systems; type service and size.
- ☐☐☐☐ Reads piping dimensions; locations.
- ☐☐☐☐ Verifies pipe clearance with construction framework.
- ☐☐☐☐ Checks location of vent stacks with framing and roof details.
- ☐☐☐☐ Understands framing so as not to cut timbers in running pipe.
- ☐☐☐☐ Determines depth of soil pipe in ground to be adequate.
- ☐☐☐☐ Assures correct slope of soil pipe to sewer.
- ☐☐☐☐ Reads and interprets local, state, and national plumbing codes.
- ☐☐☐☐ Checks DWV system to meet code specifications.
- ☐☐☐☐ Checks maximum fixture unit loading of DWV systems.
- ☐☐☐☐ Determines location and spacing of pipe supports.
- ☐☐☐☐ Makes piping diagram, sketches, drawing as required.
- ☐☐☐☐ Estimates materials required for a job.
- ☐☐☐☐ Estimates labor required for a job.
- ☐☐☐☐ Composes Bills of Material.
- ☐☐☐☐ Constructs proper/effective business letters.
- ☐☐☐☐ Conversant in language of trade.
- ☐☐☐☐ Expresses ideas and thoughts effectively.
- ☐☐☐☐ Reads and interprets catalog information.
- ☐☐☐☐ Reads and interprets manufacturer's instructions, directions.

maintenance and repair

- ☐☐☐☐ Installs sleeve insulation on exposed water piping.
- ☐☐☐☐ Installs wrap insulation on exposed water piping.
- ☐☐☐☐ Cleans clogged drains, traps, waste disposal lines using force cups, scrapers, clean out screws, root cutters as required.
- ☐☐☐☐ Locates and diagnoses causes of plumbing malfunction.
- ☐☐☐☐ Replaces worn faucet valve washers.
- ☐☐☐☐ Adjusts and/or replaces faucet valve stem.
- ☐☐☐☐ Dresses and/or replaces faucet valve seats.
- ☐☐☐☐ Replaces faucet.
- ☐☐☐☐ Repairs/replaces tub and shower control assembly.
- ☐☐☐☐ Repairs/replaces water closet flushometer.
- ☐☐☐☐ Repairs water closet bowl discharge leaking seat.
- ☐☐☐☐ Repairs/replaces leaky water closet fittings and connections.
- ☐☐☐☐ Repairs leaky pipe joints.
- ☐☐☐☐ Replaces section of ruptured pipe.
- ☐☐☐☐ Replaces plumbing fixtures.
- ☐☐☐☐ Replaces water heaters.
- ☐☐☐☐ Repairs/replaces leaky soil/waste line.

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- ☐☐☐☐ Makes cast iron "lead and oakum" pipe joint in vertical position.
- ☐☐☐☐ Makes cast iron "lead and oakum" pipe joint in horizontal position.
- ☐☐☐☐ Makes cast iron "rubber compression" pipe joint.
- ☐☐☐☐ Cuts galvanized pipe to length with single-wheel hand pipe cutter.
- ☐☐☐☐ Hand reams pipe I.D. to remove burrs.
- ☐☐☐☐ Selects drill size and tap drills holes for internal pipe threads using portable hand drill.
- ☐☐☐☐ Taps small internal pipe threads using T-handle tap wrench.
- ☐☐☐☐ Chases internal and external threads using hand taps and/or dies.
- ☐☐☐☐ Threads pipe O.D. using hand stock and dies.
- ☐☐☐☐ Threads pipe using power pipe threading machine.
- ☐☐☐☐ Bends galvanized pipe to a given radius using a hickey type pipe bender.
- ☐☐☐☐ Cuts copper tubing to length with a tubing cutter; with a hack saw.
- ☐☐☐☐ Removes burrs from tube ends by using burring tool; hand reamer.
- ☐☐☐☐ Bends flexible copper tubing to shape by hand and by use of lever-type tube bender.
- ☐☐☐☐ Selects and installs proper size flare nut.
- ☐☐☐☐ Flares ends of copper tubing in preparation of making a flare joint connection.
- ☐☐☐☐ Cleans and prepares copper tubing ends and surfaces in preparation of making soldered joints.
- ☐☐☐☐ Sweats soldered tubing joints using appropriate solder, flux, and propane torch.
- ☐☐☐☐ Bends plastic pipe using appropriate technique and equipment.
- ☐☐☐☐ Cuts plastic pipe to length with hand and/or power hack saw.
- ☐☐☐☐ Burrs and cleans plastic pipe ends in preparation of making a solvent weld joint.
- ☐☐☐☐ Applies solvent cement in proper proportion to ends of plastic pipe to be joined.
- ☐☐☐☐ Affixes joint connections cleanly and properly oriented.
- ☐☐☐☐ Performs special excavation by hand.
- ☐☐☐☐ Operates hand/power tools (drills, saws) properly, safely in installation of fixtures.

installation

- ☐☐☐☐ Checks "on site piping dimensions" against blueprint plans and elevations.
- ☐☐☐☐ Locates "drop points" of soil stack; water supply, gas supply with respect to building lines.
- ☐☐☐☐ Locates connection points to city mains; sewer, water, gas.
- ☐☐☐☐ Lays out and marks underground lines for excavation purpose.
- ☐☐☐☐ Excavates trench for underground lines with portable trenching machine.
- ☐☐☐☐ Performs special excavation as required using hand tools.
- ☐☐☐☐ Roughs-in underground water feed line; waste line; gas line.
- ☐☐☐☐ Verifies elevations and establishes appropriate slope in positioning horizontal waste line.
- ☐☐☐☐ Performs water pressure/air pressure tests as required by city inspectors.
- ☐☐☐☐ Plugs all stub-ups and backfills trenches as per specifications.
- ☐☐☐☐ Determines exact location of all fixtures and marks where fixture drains, hot and cold water lines will come through the wall and/or floor.
- ☐☐☐☐ Roughs-in drain, waste, vent pipes.
- ☐☐☐☐ Maintains proper slope on waste laterals.
- ☐☐☐☐ Roughs-in cold water supply line(s).
- ☐☐☐☐ Roughs-in hot water supply line(s).
- ☐☐☐☐ Roughs-in gas supply line(s).
- ☐☐☐☐ Supports water and waste lines with appropriate brackets, clamps, straps, hangers on proper spacing.
- ☐☐☐☐ Installs gas hot water heater.
- ☐☐☐☐ Installs electric hot water heater.
- ☐☐☐☐ Installs kitchen built-in sink with single/double compartments.
- ☐☐☐☐ Installs garbage disposal unit.
- ☐☐☐☐ Installs dishwasher.
- ☐☐☐☐ Installs a wall hung lavoratory.
- ☐☐☐☐ Installs a pedestal type lavoratory.
- ☐☐☐☐ Installs a counter top lavoratory.
- ☐☐☐☐ Installs a bathtub.
- ☐☐☐☐ Installs a bathtub shower.
- ☐☐☐☐ Installs a stall shower.
- ☐☐☐☐ Installs a floor mount close-coupled tank and bowl water closet.
- ☐☐☐☐ Installs a wall mount water closet with a flushometer.
- ☐☐☐☐ Installs a floor mount water closet with a flushometer.
- ☐☐☐☐ Installs individual wall type urinal.
- ☐☐☐☐ Installs individual stall type urinal.
- ☐☐☐☐ Installs wall mount trough type urinal.
- ☐☐☐☐ Installs a bidet.
- ☐☐☐☐ Pressure tests hot and cold water systems.
- ☐☐☐☐ Smoke or water tests drain, vent, and waste systems.

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ESSENTIAL ELEMENTS FOR ALL VOCATIONAL PROGRAMS

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4	3	2	1	
				Identifies characteristics and responsibilities of leaders
				Demonstrates characteristics and responsibilities of group members
				Participates in meetings according to rules of parliamentary procedures
				Functions effectively on committees by accepting assigned responsibilities
				Plans and conducts effective group leadership activities
				Participates in society in a democratic way

4	3	2	1	
				Evaluates career options and employment opportunities
				Demonstrates ability to complete job application, interview and follow-up
				Follows written and oral instructions to complete job task
				Demonstrates punctuality and dependability
				Follows rules, standards, and policies of the work place
				Demonstrates the ability to work cooperatively with others

4	3	2	1	
				Demonstrates responsibility in completing job tasks
				Exhibits work habits and attitudes that increase productivity
				Recognizes opportunities and options for business ownership
				Identifies entry level procedures and planning processes needed to open a business
				Utilizes terms associated with small business
				Recognizes the role of small business in the free enterprise system

COMPETENCY PROFILE

Instructional Program (Occupational Objective) _____ School _____ Date _____

Name: _____ (Last / Middle / First) Social Security No _____ Phone _____

Address: _____ Age _____ Date of Birth _____ Sex: _____

Racial/Ethnic Designation _____ Special Needs _____

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Duration of Employment	Job Title	Supervisor's Name	Training Station	Address of Employer	Phone

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Not in Labor Force	Un-employed	Military Status	Employed	Employer	Address	Supervisor	Position	Related to Training	Salary
								☐Yes ☐No	

MACHINIST

JOB COMPETENCIES

DIRECTIONS: Evaluate the student using the rating scale below. Check the appropriate number to indicate the degree of competency. The rating for each of the tasks should reflect job readiness rather than the grade earned in the class.

RATING SCALE:
4 Skilled - can work independently with no supervision
3 Moderately skilled - can perform job completely with limited supervision
2 Limited skill - requires instruction and close supervision
1 No exposure - no experience or knowledge in this area

BASIC SKILLS

4 3 2 1

- Identifies and reports potential safety hazards.
- Identifies safe storage for inflammables.
- Identifies and demonstrates correct use of fire extinguishers.
- Identifies ventilation hazards.
- Reads and understands safety labels.
- Maintains orderly work area.
- Observes personal job safety procedures.
- Dresses safely.
- Observes rules of safety in operating machines.
- Exhibits proper tool safety in use and handling.
- Describes minor first-aid treatment.
- Demonstrates knowledge of language of trade.
- Demonstrates proper use, maintenance, and care of machines.
- Inventories supplies, materials, and equipment.
- Prepares job estimate.
- Schedules job.
- Maintains business records.
- Writes equipment, material, and tool specifications.

MATH

- Adds and subtracts whole numbers, fractions, and decimals.
- Multiplies and divides whole numbers, fractions, and decimals.
- Converts fractions and decimals.
- Solves problems using fractions and decimals.
- Applies principles of Plane Geometry in problem solving.
- Applies principles of Trigonometry in problem solving.
- Utilizes machinists' handbook in problem solving.
- Calculates cutting speeds and feeds.
- Figures bill of materials.

POWER SAWS

4 3 2 1

- Selects and installs proper blade.
- Sets blade guides and material stops.
- Removes blade and coils for storage.
- Welds band blade.
- Cuts material to specified length.
- Sets up and cuts various material shapes.
- Selects cutting speed and feed.
- Band saws external section.
- Band saws internal section.
- Selects work-holding device and makes appropriate setup.
- Makes angle cuts.
- Utilizes appropriate coolant.
- Identifies sawing problems, their causes and takes corrective actions.
- Identifies parts of saw and their function.

PRECISION MEASURING TOOLS

- Identifies precision tools.
- Demonstrates proper selection, use, and care of precision tools.
- Measures with inside micrometer.
- Measures with outside micrometer.
- Measures with vernier caliper.
- Measures with universal bevel protractor.
- Measures with vernier height gage.
- Measures and transfers measurements with surface gage.
- Measures with telescoping gage and small hole gage.
- Aligns setup with dial indicator.
- Measures with fixed gages.
- Measures with depth micrometer.
- Makes corrective adjustment on micrometer.
- Measures gear tooth with gear tooth vernier caliper.
- Inspects bore size with dial bore gage.
- Measures thread with thread micrometer.
- Measures angle with sine bar.
- Measures angle with sine plate.
- Uses gage blocks for measuring.
- Sets go - no - go gages.
- Identifies surface finish comparator.
- Identifies surface finishes.

DRILL PRESS

- Identifies the basic parts and their function.
- Performs required layout for drilling operation.
- Identifies and selects work-holding devices.
- Makes appropriate setup.
- Selects cutting speed and feed.
- Selects, inspects, and demonstrates proper use of cutting tool.
- Center drills and drills hole to specification.
- Drills and machine reams hole.
- Drills and counterbores hole.

TURRET LATHE

4 3 2 1

- Identifies parts and function.
- Identifies tooling and function.
- Plans and sets up job sequence.
- Determines proper cutting speeds and feeds.
- Sets feed stops for turret feed, carriage feed, and cross slide.
- Cuts external threads using die head.
- Cuts internal threads using die head.
- Cuts internal threads using releasing tap holder.
- Performs basic turret operations - center drill, drill, ream, and bore.
- Performs cut-off operations.
- Performs basic engine lathe operations with square turret.
- Identifies machine operating problems, their causes and takes corrective actions.
- Utilizes proper application of coolant.
- Makes speed and feed control settings.
- Mounts and utilizes chucks, face plates, and collets.

HORIZONTAL/VERTICAL MILL

- Identifies parts and function.
- Identifies accessories and attachments.
- Selects, sets up, and aligns work-holding devices.
- Selects and installs arbor and adaptors.
- Determines proper cutting speeds and feeds.
- Adjusts for backlash.
- Selects, inspects, and installs cutter.
- Identifies conventional and climb milling procedures.
- Sets feed stops.
- Machines workpiece square and parallel.
- Performs angle milling operation.
- Performs slab milling operation.
- Performs face milling operation.
- Machines slots, grooves, and keyways.
- Performs indexing operation.
- Performs form milling operation.
- Cuts gears.
- Aligns work with dial indicator.
- Identifies machine operating problems, their causes and takes corrective actions.
- Utilizes proper use of coolant.
- Makes speed and feed control settings.
- Performs milling operations with rotary table.
- Drills, reams, bores, and taps holes.

CYLINDRICAL GRINDER

- Identifies basic parts and their function.
- Identifies the various attachments and their function.
- Aligns table, workhead, and footstock.
- Selects, inspects, and installs grinding wheel.

- Converts decimal angles to degrees, minutes, seconds.
- Solves sine bar problems.
- Solves simple indexing problems.
- Solves right angle Trigonometry problems.
- Solves problems involving ratios and proportions.
- Calculates tapers.

PRINT READING

- Reads and interprets prints.
- Interprets symbols and abbreviations.
- Makes pictorial and orthographic sketches.
- Interprets and applies notes.
- Constructs project using basic print.
- Works from a sketch.
- Plans order of work operations from print.

HAND TOOLS AND BENCH WORK

- Identifies basic hand tools.
- Demonstrates ability to select, use, and care for hand tools.
- Cross files material to specified size and finish.
- Files material to specification by draw filing.
- Cuts material to specification with hacksaw.
- Taps hole by hand.
- Cuts external thread with die.
- Shears or chips material with chisel.
- Drills hole with electric hand drill.
- Hand reams hole to specification.
- Conditions work surface for layout.
- Makes layout with basic layout tools.
- Makes layout with precision layout and measuring tools.
- Makes layout of keyseat on shaft.
- Locates center of stock.
- Takes measurements with thread, radius, and feeler gages.
- Takes measurements with semi-precision tools.
- Transfers measurements with semi-precision tools.
- Demonstrates knowledge in principles of broaching.
- Identifies application of broaching process.
- Cuts a keyway with a broach.
- Drills and countersinks hole.
- Drills and spotfaces hole.
- Drills hole at an angle.
- Performs drilling operation with rotary table.
- Taps hole with tapping attachment.
- Utilizes appropriate coolant.
- Aligns parts to spindle.
- Identifies problems, their causes and takes corrective actions.

LATHE

- Identifies lathe parts and function.
- Identifies attachments and accessories.
- Makes minor adjustments - backlash, etc.
- Identifies, selects, and sets up HSS cutting tool.
- Demonstrates ability to make setup.
- Establishes proper cutting speed and feed.
- Mounts chucks, face plate, and collet holder.
- Center drills, drills, and reams.
- Straight turns and taper turns.
- Turns and bores tapers with taper attachment, compound rest, and offsetting tailstock.
- Trues workpiece with dial indicator.
- Cylindrical grinds with tool post grinder.
- Sets feed stops.
- Utilizes proper application of coolant.
- Identifies machine problems and causes and makes correction.
- Uses steady rest and follow rest.
- Machines to required finish.
- Cuts threads - internal and external.
- Turns internal and external grooves.
- Bores and counterbores.
- Knurls, form turns, and parts.
- Turns between centers using a mandrel.
- Uses independent chuck and universal chuck and collets.
- Machines workpiece between centers.
- Machines workpiece mounted on face plate.
- Makes speed and feed control settings.
- Polishes workpiece to specifications.
- Selects and utilizes grinder attachments.
- Utilizes proper application of coolant.
- Grinds outside diameter parallel.
- Grinds internal diameter parallel.
- Taper grinds outside diameter.
- Taper grinds inside diameter.
- Identifies grinding problems, causes and makes correction.
- Performs operation to specified size, shape, and finish.
- Selects correct cutting speed and feed.
- Dresses and trues grinding wheel.

PEDESTAL AND TOOL GRINDER

- Identifies basic parts and their function.
- Selects grinding wheel.
- Inspects and installs grinding wheel.
- Dresses and trues grinding wheel.
- Adjusts tool rest.
- Grinds drill bits.
- Grinds HSS single point cutting tools.
- Grinds carbide single point cutting tools.
- Identifies various types of abrasives.
- Establishes and maintains proper tool geometry.
- Utilizes appropriate coolant.
- Sharpens chisels and punches.
- Demonstrates skill in selection and use of abrasives - grinding, polishing, etc.

SPECIAL GRINDER

- Identifies basic parts and their function.
- Selects, inspects, and properly installs grinding wheel.
- Dresses and trues grinding wheel for specified job.
- Identifies and utilizes work-holding devices.
- Makes setup for specified job.
- Grinds flat surface to specification.
- Identifies grinding problems, their causes and takes corrective actions.
- Maintains specified size, shape, and finish.
- Selects and utilizes coolant.
- Dresses wheel and form grinds to specification.
- Makes table travel stop adjustments.
- Sets table travel and feed adjustments.
- Determines proper feed.

Competencies Related to Essential Elements are in Bold Print

TOOL AND CUTTER GRINDER

4	3	2	1	
				Identifies grinder parts and function.
				Identifies grinder attachments and their use.
				Makes setup for tool grinding operation.
				Aligns headstock, footstock, and work-head.
				Establishes proper tool geometry (cutting angles).
				Selects, inspects, and installs grinding wheel.
				Determines proper cutting speed and feed.
				Grinds cutting tools to specification.
				Dresses and trues grinding wheel.
				Inspects accuracy of grinding operation.
				Identifies grinding problems, their causes and takes corrective actions.

SHAPERS, SLOTTERS, AND PLANERS

4	3	2	1	
				Demonstrates knowledge of principles of shaping - shaper, slotter, and planer.
				Identifies application of shapers, slotters, and planers.
				Demonstrates proper use, maintenance, and care.
				Identifies basic parts and function.
				Selects, sets up, and aligns work-holding devices.
				Shapes material to specifications.
				Identifies shaping problems, their causes and takes corrective action.

SPECIAL MACHINING PROCESSES

4	3	2	1	
				Demonstrates knowledge of basic principles of electrical discharge machining (EDM) - equipment and procedures.
				Identifies advantages and disadvantages of EDM.
				Demonstrates knowledge of basic principles of electrochemical machining (ECM) - equipment and procedures.
				Identifies the advantages and disadvantages of ECM.
				Demonstrates knowledge of principles of numerical control machining - taped and computer.
				Identifies application of N/C.
				Identifies relationship between the cartesian coordinate system and machine axes of a N/C machine.
				Applies principles of the cartesian coordinate system in a practical situation.

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				Demonstrates characteristics and responsibilities of group members
				Participates in meetings according to rules of parliamentary procedures
				Functions effectively on committees by accepting assigned responsibilities
				Plans and conducts effective group leadership activities
				Participates in society in a democratic way

4	3	2	1	
				Evaluates career options and employment opportunities
				Demonstrates ability to complete job application, interview and follow-up
				Follows written and oral instructions to complete job task
				Demonstrates punctuality and dependability
				Follows rules, standards, and policies of the work place
				Demonstrates the ability to work cooperatively with others

4	3	2	1	
				Demonstrates responsibility in completing job tasks
				Exhibits work habits and attitudes that increase productivity
				Recognizes opportunities and options for business ownership
				Identifies entry level procedures and planning processes needed to open a business
				Utilizes terms associated with small business
				Recognizes the role of small business in the free enterprise system

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WELDER

JOB COMPETENCIES

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1 No exposure - no experience or knowledge in this area

4321 BASIC SKILLS

- [ ] Identifies and corrects or reports safety hazards.
- [ ] Identifies and utilizes proper storage for inflammables.
- [ ] Identifies and demonstrates correct use of fire extinguishers.
- [ ] Identifies ventilation hazards and takes corrective action.
- [ ] Observes safety labels.
- [ ] Demonstrates proper maintenance, use, and safety in working with machines, tools, and equipment.
- [ ] Utilizes reference books and charts.
- [ ] Inventories supplies, materials, and equipment.
- [ ] Prepares job estimate.
- [ ] Schedules jobs.
- [ ] Maintains business records.
- [ ] Writes equipment, material, and tool specifications.

4321 GAS TUNGSTEN - ARC WELDING - CARBON STEEL

- [ ] Identifies components and explains function.
- [ ] Identifies, selects, and safely handles shielding gas.
- [ ] Identifies, selects, shapes, and installs tungsten electrode.
- [ ] Identifies, selects, and sets up equipment.
- [ ] Identifies and selects power source.
- [ ] Adjusts current, gas flow setting, and post flow timer and strikes arc.
- [ ] Identifies, selects joint design, and prepares material.
- [ ] Identifies base material and selects filler rod.
- [ ] Builds pad of beads in flat, horizontal, vertical, and overhead positions.
- [ ] Makes fillet weld in test position 1F.
- [ ] Makes fillet weld in test position 2F.
- [ ] Makes fillet weld in test position 3F.
- [ ] Makes fillet weld in test position 4F.
- [ ] Makes square butt weld.
- [ ] Makes grooved weld in test position 1G.
- [ ] Makes grooved weld in test position 2G.
- [ ] Makes grooved weld in test position 3G.
- [ ] Completes grooved pipe weld in test position 1G.
- [ ] Completes grooved pipe weld in test position 2G.
- [ ] Completes grooved pipe weld in test position 5G.
- [ ] Completes grooved pipe weld in test position 6G.
- [ ] Identifies welding problems, their causes, and takes corrective action.
- [ ] Prepares weld for test.
- [ ] Passes visual test.
- [ ] Passes destructive test.
- [ ] Passes non-destructive test.

GAS TUNGSTEN - ARC WELDING - STAINLESS STEEL

- [ ] Identifies, selects job design, and prepares material.
- [ ] Identifies base material and selects filler rod.
- [ ] Builds pad of beads in flat, horizontal, and vertical positions.
- [ ] Makes lap weld in flat, horizontal, and vertical positions.
- [ ] Makes fillet weld in flat, horizontal, and vertical positions.
- [ ] Identifies welding problems, their causes, and takes corrective action.
- [ ] Prepares weld for test.
- [ ] Passes visual test.
- [ ] Passes destructive test.
- [ ] Passes non-destructive test.

4321 SHIELDED METAL ARC WELDING - PIPE

- [ ] Prepares material for correct weld procedure.
- [ ] Identifies and selects correct electrode.
- [ ] Sets welding current for correct weld procedure.
- [ ] Completes weld to specifications in flat position (1G).
- [ ] Completes weld to specifications in horizontal position (2G).
- [ ] Completes weld to specifications in multiple position (5G).
- [ ] Completes weld to specifications in multiple position (6G).
- [ ] Makes fillet weld in test position 1F.
- [ ] Makes fillet weld in test position 2F.
- [ ] Makes fillet weld in test position 2FR.
- [ ] Makes fillet weld in test position 4F.
- [ ] Makes fillet weld in test position 5F.
- [ ] Makes stud weld in test position 1S.
- [ ] Makes stud weld in test position 2S.
- [ ] Makes stud weld in test position 4S.
- [ ] Identifies welding problems, their causes, and takes corrective action.
- [ ] Prepares weld for test.
- [ ] Passes visual test.
- [ ] Passes destructive test.
- [ ] Passes non-destructive test.

GAS METAL ARC WELDING - PIPE

- [ ] Completes grooved pipe weld in test position 1G.
- [ ] Completes grooved pipe weld in test position 2G.
- [ ] Completes grooved pipe weld in test position 5G - downhill.
- [ ] Completes grooved pipe weld in test position 5G - uphill.
- [ ] Completes grooved pipe weld in test postition 6G.
- [ ] Identifies welding problems, their causes, and takes corrective action.
- [ ] Prepares weld for test.
- [ ] Passes visual test.
- [ ] Passes destructive test.
- [ ] Passes non-destructive test.

PRINT READING

- [ ] Reads and interprets basic prints.
- [ ] Interprets welding symbols and abbreviations.
- [ ] Constructs project using basic print or sketch.
- [ ] Makes sketches - pictorial and orthographic.

MATH

- [ ] Demonstrates ability to solve problems using whole numbers, fractions, and decimals.
- [ ] Applies principles of geometry and trigonometry in problem solving and making a layout.
- [ ] Makes cost analysis on materials and estimates time.

HAND TOOLS AND BENCH WORK

- [ ] Identifies basic hand tools.
- [ ] Demonstrates ability to select, use, and care for hand tools.
- [ ] Makes layout of material for structural and pipe fabrication.
- [ ] Makes layout with basic layout tools.
- [ ] Demonstrates ability to use power machinery, grinder, drill press, and power saw correctly/safely.
- [ ] Prepares material for weld procedure.
- [ ] Makes layout for 90° pipe branch with template/contour marker.
- [ ] Makes layout for lateral pipe connection with template/contour marker.
- [ ] Makes layout for "Y" pipe branch connection with template/contour marker.
- [ ] Makes layout for elbow fabrication.

GAS TUNGSTEN - ARC WELDING - ALUMINUM

- [ ] Identifies and selects job design and prepares material.
- [ ] Identifies base material and selects filler rod.
- [ ] Builds pad of beads in flat, horizontal, vertical, and overhead positions.
- [ ] Makes lap weld in flat, horizontal, vertical, and overhead positions.
- [ ] Makes butt weld in flat, horizontal, vertical, and overhead positions.
- [ ] Identifies welding problems, their causes, and takes corrective action.
- [ ] Prepares weld for test.
- [ ] Passes visual test.
- [ ] Passes destructive test.
- [ ] Passes non-destructive test.

SHIELDED METAL ARC WELDING - PLATE

- [ ] Demonstrates knowledge in theory of shielded metal arc welding.
- [ ] Identifies and selects power source and sets current for weld procedure.
- [ ] Identifies and makes proper electrode selection.
- [ ] Identifies, selects joint design, and prepares material for weld procedure.
- [ ] Identifies welding problems, their causes, and takes corrective action.
- [ ] Builds pad of beads in flat, horizontal, vertical, and overhead positions.
- [ ] Makes fillet weld in flat test position (1F).
- [ ] Makes fillet weld in horizontal test position (2F).
- [ ] Makes fillet weld in vertical test position (3F).
- [ ] Makes fillet weld in overhead test position (4F).
- [ ] Makes groove weld in flat test position (1G).
- [ ] Makes groove weld in horizontal test position (2G).
- [ ] Makes groove weld in vertical test position (3G).
- [ ] Makes groove weld in overhead test position (4G).
- [ ] Prepares weld for test.
- [ ] Passes visual test.
- [ ] Passes destructive test.
- [ ] Passes non-destructive test.

GAS METAL ARC WELDING - PLATE

- [ ] Identifies components and explains function.
- [ ] Identifies, selects, and safely handles shielding gases.
- [ ] Identifies and selects wire electrode.
- [ ] Makes setup of equipment.
- [ ] Adjusts current, feed rate, and gas flow.
- [ ] Builds pad of beads in flat, horizontal, vertical, and overhead positions.
- [ ] Makes fillet weld in test position 1F.
- [ ] Makes fillet weld in test position 2F.
- [ ] Makes fillet weld in test position 3F.
- [ ] Makes fillet weld in test position 4F.
- [ ] Makes a square butt weld.
- [ ] Completes grooved weld in test position 2G.
- [ ] Completes grooved weld in test position 3G.
- [ ] Completes grooved weld in test position 4G.
- [ ] Identifies welding problems, their causes, and takes corrective action.
- [ ] Prepares material for correct welding procedures.
- [ ] Prepares weld for test.
- [ ] Passes visual test.
- [ ] Passes destructive test.
- [ ] Passes non-destructive test.

METALLURGY AND HEAT TREATING

- [ ] Identifies the classification, physical properties, and application of ferrous and non-ferrous metals.
- [ ] Identifies and applies principles of metallurgy - preheating, post - heating, and bending.
- [ ] Identifies and applies principles of metallurgy in annealing, hardening, and tempering.
- [ ] Interprets the system (SAE and AISI) of classification of steels.
- [ ] Tests metal to determine properties - hardness, toughness, tensile strength, and impact.
- [ ] Identifies classification of ferrous metal by spark test.
- [ ] Describes methods of testing metals.

Competencies Related to Essential Elements are in Bold Print

4321 OXY-FUEL CUTTING/WELDING

- [ ] Identifies types of fuels and their application.
- [ ] Handles, makes preliminary safety inspection, and stores cylinders properly.
- [ ] Identifies, selects, and installs oxy-fuel welding and cutting equipment.
- [ ] Lights and adjusts flame for welding and cutting, and properly secures oxy-fuel equipment.
- [ ] Makes straight ninety-degree and beveled cuts on mild steel plate.
- [ ] Pierces holes and cuts slots.
- [ ] Makes circle cuts - off hand and with guide.
- [ ] Makes ninety-degree and beveled cuts on plate with radiograph cutting machine.
- [ ] Makes ninety-degree and bevel cuts on pipe.
- [ ] Cuts and fits pipe connections - laterals, elbows, and branch.
- [ ] Cuts round bars and other structural shapes used in fabrication.

4321 OXY-FUEL CUT./WELD. (Cont'd)

- [ ] Makes square butt weld in flat, vertical, horizontal, and overhead positions.
- [ ] Makes grooved butt weld in flat, vertical, horizontal, and overhead positions.
- [ ] Makes fillet weld in flat, horizontal, vertical, and overhead positions.
- [ ] Braze welds carbon steels.
- [ ] Braze welds cast iron.
- [ ] Prepares weld for testing and passes visual and destructive test.
- [ ] Identifies welding and cutting problems, their causes, and takes corrective action.
- [ ] Identifies and selects correct welding/brazing rod.
- [ ] Completes weld on pipe in vertical axis position.
- [ ] Completes weld on pipe in horizontal axis position.

4321 SPECIALIZED WELDING/CUTTING PROCESSES

Demonstrates knowledge in the application of special cutting processes:

- [ ] Air Carbon Arc (AAC)
- [ ] Oxygen Arc (AOC)
- [ ] Gas Tungsten Arc (GTAC)
- [ ] Shielded Metal Arc (SMAC)
- [ ] Plasma Arc (PAC)
- [ ] Oxygen Lance (LOC)
- [ ] Chemical Flux (FOC)
- [ ] Oxyfuel Gas Underwater

Demonstrates knowledge in the application of special welding processes:

- [ ] Flux Cored (FCAW)
- [ ] Resistance Welding - spot, projection, flash, seam, etc.
- [ ] Submerged Arc (SAW)
- [ ] Electroslag (ESW)
- [ ] Ultrasonic (USW)
- [ ] Laser Beam (LBW)
- [ ] Electron Beam (EBW)
- [ ] Plasma Arc (PAW)

ESSENTIAL ELEMENTS FOR ALL VOCATIONAL PROGRAMS

DIRECTIONS: Evaluate the trainee, using the rating scale below. Check the appropriate number to indicate the degree of competency. The rating for each of the tasks should reflect job readiness rather than the grade given in the class.

RATING SCALE:
4 Skilled – can work independently with no supervision
3 Moderately skilled – can perform job completely with limited supervision
2 Limited skill – requires instruction and close supervision
1 No exposure – no experience or knowledge in this area

4	3	2	1	
				Identifies characteristics and responsibilities of leaders
				Demonstrates characteristics and responsibilities of group members
				Participates in meetings according to rules of parliamentary procedures
				Functions effectively on committees by accepting assigned responsibilities
				Plans and conducts effective group leadership activities
				Participates in society in a democratic way

4	3	2	1	
				Evaluates career options and employment opportunities
				Demonstrates ability to complete job application, interview and follow-up
				Follows written and oral instructions to complete job task
				Demonstrates punctuality and dependability
				Follows rules, standards, and policies of the work place
				Demonstrates the ability to work cooperatively with others

4	3	2	1	
				Demonstrates responsibility in completing job tasks
				Exhibits work habits and attitudes that increase productivity
				Recognizes opportunities and options for business ownership
				Identifies entry level procedures and planning processes needed to open a business
				Utilizes terms associated with small business
				Recognizes the role of small business in the free enterprise system

COMPETENCY PROFILE

Instructional Program (Occupational Objective) _____ School _____ Date _____

Name _____ Social Security No _____ Phone _____

Address _____ Age _____ Date of Birth _____ Sex _____

Racial/Ethnic Designation _____ Special Needs _____

In Case of Emergency Contact _____ Address _____ Home phone _____ Business phone _____

OR

Contact _____ Address _____ Home phone _____ Business phone _____

Method of Instruction	Grade	Enrollment Date	Withdrawal Date	Completion Date	Total Class Hours	Total Laboratory Hours	Total On-the-job Training Hours	Instructor

ON-THE-JOB TRAINING/WORK EXPERIENCE

Duration of Employment	Job Title	Supervisor's Name	Training Station	Address of Employer	Phone

FOLLOW-UP RECORD

Date	Current Address	Ed. Status	Educational Institution	Educational Objective
		☐ Attending ☐ Not Attending		

Not in Labor Force	Un-employed	Military Status	Employed	Employer	Address	Supervisor	Position	Related to Training	Salary
								☐Yes ☐No	

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PRINTER

JOB COMPETENCIES

DIRECTIONS: Evaluate the student using the rating scale below. Check the appropriate number to indicate the degree of competency. The rating for each of the tasks should reflect job readiness rather than the grade earned in the class.

RATING SCALE:
4 Skilled - can work independently with no supervision
3 Moderately skilled - can perform job completely with limited supervision
2 Limited skill - requires instruction and close supervision
1 No exposure - no experience or knowledge in this area

TYPE SETTING

4 3 2 1

- Identifies typeface designs and sizes.
- Defines point system.
- Identifies and uses line gauge.
- Identifies parts of piece of single type.
- Measures type height with micrometer.
- Measures point size with line gauge.
- Describes and uses correct spacing materials.
- Describes California job case layout.
- Correctly works with type case.
- Identifies composing stick parts and sets as specified.
- Sets justified line of type.
- Uses Rouse job stick.
- Uses Buckeye composing stick.
- Uses gate scale line gauge to center line.
- Tests and corrects justification by spacing in.
- Correctly spaces type composition.
- Sets straight matter.
- Ties up type forms.
- Sets up and inks proof press.
- Pulls proofs.
- Reads proof and marks corrections.
- Makes corrections in galley and/or stick.
- Cleans, unties, and distributes type.
- Makes proofs with planer.
- Operates slug cutter.
- Uses mitering machine.
- Describes and uses phototypesetting process.
- Makes completed layout and sets job specified.
- Describes use of hot and cold type composition for reproduction.

PHOTO-OFFSET

4 3 2 1

- Describes kinds of process cameras.
- Describes functions of process camera parts.
- Adjusts cameras for operations.
- Describes types of photographic film.
- Selects proper film for jobs.
- Describes process of film developing.
- Shoots and develops line negatives.
- Describes contact screens used in halftone photography.
- Shoots and develops halftone negatives.
- Compares negatives to problem chart.
- Makes rescreened halftone negatives.
- Makes reverse photoprints.
- Strips negatives for lithographic plates.
- Opaques and marks layout sheets.
- Makes flat for one-up job.
- Makes flat for four-up job.
- Prepares direct-image plates.
- Burns type "R" presensitized plates.
- Makes fountain solution for press.
- Installs plate and blanket on press.
- Makes adjustments and operates press.
- Prepares plates for color printing.
- Troubleshoots offset presswork.
- Explains fundamentals of sheet-fed and web offset presses and duplicators.
- Sets up, operates, and performs maintenance on offset presses.

OFFICE DUPLICATORS

- Prepares masters for spirit duplicators.
- Operates spirit duplicators.
- Prepares mimeograph stencils.
- Operates mimeograph duplicators.
- Prepares plates for offset duplicators.
- Operates offset duplicators.

LAYOUT AND DESIGN

- Prepares thumbnail sketches.
- Uses principles of good design in planning, laying out, and copy fitting jobs.
- Explains differences in layout types.
- Develops rough layouts from sketches.
- Positions elements of layout for production.
- Develops comprehensive layout.
- Chooses colors appropriate to designs.
- Selects fitting type style.
- Makes production notations on tissue overlays.
- Selects and uses clip art.
- Uses common typewriter for copy preparation.
- Justifies margins with strike-on typesetting machines.
- Uses photodisplay machines.
- Operates phototypesetting machines.
- Operates microcomputer as typesetter.

ENTREPRENEURSHIP

- Inventories supplies.
- Orders and stocks supplies.
- **Requisitions replacement parts.**
- **Inventories and maintains tools.**
- **Represents shop to prospective customers.**
- Explains customer ideas to others.
- **Estimates labor and material costs.**
- **Relates offset printing technology.**
- **Accurately schedules and completes jobs on time.**
- Communicates effectively on telephone.
- **Explains legal restrictions on reproduction.**

BINDERY AND FINISHING

- Cleans and services hydraulic paper cutter.
- Calculates amount and size of stock needed.
- Cuts stock and padding to dimensions.
- **Sets up and adjusts single head paper drill.**
- **Drills holes in printed pages.**
- **Prepares wire stretcher for operation.**
- **Saddle stitches pamphlets and books.**
- **Side stitches pamphlets and books.**
- **Sets up friction - feed folder.**
- **Operates friction - feed folding machine.**
- **Operates buckle type folding machine.**
- **Operates floor model folders.**
- **Uses creasing rule.**
- **Operates rotary creaser.**
- **Operates perforating machine.**
- **Sets up and runs gathering machine.**
- **Sets up and runs collator.**
- **Inserts signatures by hand.**
- **Sets up and inserts with machine.**
- **Sews signatures for edition binding.**
- **Performs padding operations.**
- **Operates plastic binder.**

LETTERPRESS PRINTING

- Selects proper ink for jobs.
- Mixes and matches ink colors.
- Conditions ink to suit jobs.
- Describes care and handling of inks.
- **Selects proper paper for jobs.**
- Describes basic printing processes.
- Describes types of letterpresses.
- Makes lockup for platen press.
- Inks platen press.
- Installs type form.
- Makes adjustments as needed.
- Prints jobs on platen press.
- Cleans, oils, and services platen press.
- Makes lockup for automatic platen press.
- Adjusts fountain screws on automatic platen press.
- Makes necessary adjustments on automatic platen press.
- Prints specified jobs on automatic platen press.
- Runs jobs to specifications on automatic cylinder press.
- Cleans and services automatic cylinder press.
- **Prepares direct image, presensitized, and electrostatic plates.**

GRAVURE AND SCREEN

- Describes gravure plate making methods.
- Describes types of gravure presses.
- Hand cuts paper stencils.
- Hand cuts aqua film stencils.
- Hand cuts lacquer film stencils.
- Adheres stencils to screen mesh.
- Prepares masks for screen mesh.
- Prepares indirect photographic stencils.
- Prepares direct photographic stencils.
- Operates screen presses.
- Performs cleanup operations.
- Uses heat transfer method.

Competencies Related to Essential Elements are in Bold Print

ESSENTIAL ELEMENTS FOR ALL VOCATIONAL PROGRAMS

DIRECTIONS: Evaluate the trainee, using the rating scale below. Check the appropriate number to indicate the degree of competency. The rating for each of the tasks should reflect job readiness rather than the grade given in the class.

RATING SCALE:
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2 Limited skill—requires instruction and close supervision
1 No exposure—no experience or knowledge in this area

4	3	2	1	
				Identifies characteristics and responsibilities of leaders
				Demonstrates characteristics and responsibilities of group members
				Participates in meetings according to rules of parliamentary procedures
				Functions effectively on committees by accepting assigned responsibilities
				Plans and conducts effective group leadership activities
				Participates in society in a democratic way

4	3	2	1	
				Evaluates career options and employment opportunities
				Demonstrates ability to complete job application, interview and follow-up
				Follows written and oral instructions to complete job task
				Demonstrates punctuality and dependability
				Follows rules, standards, and policies of the work place
				Demonstrates the ability to work cooperatively with others

4	3	2	1	
				Demonstrates responsibility in completing job tasks
				Exhibits work habits and attitudes that increase productivity
				Recognizes opportunities and options for business ownership
				Identifies entry level procedures and planning processes needed to open a business
				Utilizes terms associated with small business
				Recognizes the role of small business in the free enterprise system

COMPETENCY PROFILE

Instructional Program (Occupational Objective) _____ School _____ Date _____

Name _____ (Last, Middle, First) Social Security No _____ Phone _____

Address _____ Age _____ Date of Birth _____ Sex _____

Racial/Ethnic Designation _____ Special Needs _____

In Case of Emergency, Contact _____ Address _____ Home phone _____ Business phone _____

OR

Contact _____ Address _____ Home phone _____ Business phone _____

Method of Instruction	Grade	Enrollment Date	Withdrawal Date	Completion Date	Total Class Hours	Total Laboratory Hours	Total On-the-job Training Hours	Instructor

ON-THE-JOB TRAINING/WORK EXPERIENCE

Duration of Employment	Job Title	Supervisor's Name	Training Station	Address of Employer	Phone

FOLLOW-UP RECORD

Date	Current Address	Ed. Status	Educational Institution	Educational Objective
		☐ Attending ☐ Not Attending		

Not in Labor Force	Un-employed	Military Status	Employed	Employer	Address	Supervisor	Position	Related to Training	Salary
								☐Yes ☐No	

VOCATIONAL ELECTRONICS TECHNICIAN

JOB COMPETENCIES

DIRECTIONS: Evaluate the student using the rating scale below. Check the appropriate number to indicate the degree of competency. The rating for each of the tasks should reflect job readiness rather than the grade earned in the class.

RATING SCALE:
4 Skilled - can work independently with no supervision
3 Moderately skilled - can perform job completely with limited supervision
2 Limited skill - requires instruction and close supervision
1 No exposure - no experience or knowledge in this area

ELECTRONIC FUNDAMENTALS

4321

- ☐☐☐☐ Describes Ohm's law and power relationship.
- ☐☐☐☐ Describes magnetism as it relates to inductance.
- ☐☐☐☐ Designs and builds direct current circuits using bread board and printed circuit.
- ☐☐☐☐ Demonstrates proper use, maintenance, and storage of tools and equipment.
- ☐☐☐☐ Identifies the sources of electricity.
- ☐☐☐☐ Applies principles of math and physics to electronics.
- ☐☐☐☐ Demonstrates use of voltage, current, resistance, scientific notation, and metric prefixes.
- ☐☐☐☐ Reads schematic diagrams.
- ☐☐☐☐ Solders electrical connections.
- ☐☐☐☐ Describes functions of meters.
- ☐☐☐☐ Explains operation of electromagnetic devices.
- ☐☐☐☐ Describes semi-conductor structure and operation.
- ☐☐☐☐ Describes uses of zener diode voltage regulators.

CIRCUIT ANALYSIS

- ☐☐☐☐ Demonstrates use of direct current electronics related to current flow and voltage development related to resistance.
- ☐☐☐☐ Describes alternating currents as related to measurements, wave forms, capacity and inductive circuits, transformer and tuned circuits as used in radio and television.

CAPACITANCE

4321

- ☐☐☐☐ Identifies and tests capacitors.
- ☐☐☐☐ Selects capacitors for use.
- ☐☐☐☐ Designs R-C time constant circuits to specifications.
- ☐☐☐☐ Constructs R-C time constant circuits.
- ☐☐☐☐ Analyzes R-C time constant circuits.
- ☐☐☐☐ Calculates combined capacitor needs.
- ☐☐☐☐ Combines capacitors in parallel to specifications.
- ☐☐☐☐ Combines capacitors in series to specifications.
- ☐☐☐☐ Identifies capacitor functions in schematic diagrams.
- ☐☐☐☐ Identifies capacitor functions in apparatus.
- ☐☐☐☐ Makes in-circuit checks with VOM.

AC-POWER SUPPLY

- ☐☐☐☐ Describes the frequency response of bend-pass, bend-stop, high pass, and low-pass filters related to radio and television.
- ☐☐☐☐ Describes types of transformers.
- ☐☐☐☐ Defines EIA color coding.
- ☐☐☐☐ Determines transformer requirements.
- ☐☐☐☐ Calculates transformer efficiency.
- ☐☐☐☐ Analyzes rectifier requirements.
- ☐☐☐☐ Determines rectifier units for specific installations.
- ☐☐☐☐ Installs rectifiers for proper polarity.
- ☐☐☐☐ Tests rectifier function.
- ☐☐☐☐ Defines types of voltage divider circuits.
- ☐☐☐☐ Describes uses of voltage dividers.
- ☐☐☐☐ Selects voltage divider to specifications.
- ☐☐☐☐ Installs voltage dividers.
- ☐☐☐☐ Tests voltage at taps.
- ☐☐☐☐ Selects components for complete power supply.
- ☐☐☐☐ Constructs a complete power supply.
- ☐☐☐☐ Tests power supply and corrects defects.

TRANSISTORS

- ☐☐☐☐ Describes structure and operation of semi-conductors.
- ☐☐☐☐ Uses practical method of testing semi-conductor diodes/transistors using volt-ohm meters.
- ☐☐☐☐ Demonstrates operation of transistors by observing and measuring electrical characteristics.
- ☐☐☐☐ Defines functions of three basic electrodes.
- ☐☐☐☐ Identifies differences in NPN and PNP transistors.
- ☐☐☐☐ Identifies transistor symbols in schematics.

TRANSISTOR AMPLIFIERS (Cont'd)

4321

- ☐☐☐☐ Troubleshoots R-F transmitter problems.
- ☐☐☐☐ Constructs antennae.
- ☐☐☐☐ Tunes antennae.
- ☐☐☐☐ Matches transmission lines with transmitters.

POWER AMPLIFIERS

- ☐☐☐☐ Tests diode tube characteristics.
- ☐☐☐☐ Tests triode characteristics.
- ☐☐☐☐ Tests to determine amplification characteristics.
- ☐☐☐☐ Constructs solid state push-pull amplifiers.
- ☐☐☐☐ Matches amplifier output loads and impedance.
- ☐☐☐☐ Measures frequency-response of audio amplifiers.

OSCILLATORS

- ☐☐☐☐ Relates basic theory of frequency modulation.
- ☐☐☐☐ Assembles Armstrong oscillators in practical circuits.
- ☐☐☐☐ Measures frequency by Heterodyne method.
- ☐☐☐☐ Sets up Hartley oscillators.
- ☐☐☐☐ Properly operates Hartley oscillators.
- ☐☐☐☐ Connects Colpitts oscillators in circuit.
- ☐☐☐☐ Describes operational characteristics of Colpitts oscillators.
- ☐☐☐☐ Sets up crystal oscillators in Pierce circuit.
- ☐☐☐☐ Describes Piezo-electric action.
- ☐☐☐☐ Measures frequency and determines output.
- ☐☐☐☐ Matches proper oscillator circuits with devices.
- ☐☐☐☐ Applies frequency modulation as related to modulation percentage; side band; radiated power; modulator systems, including direct FM, indirect FM, reactance tube modulator, serrasoid modulator, and stereophonic multiplexing.

RECEIVERS - TRANSMITTERS

- ☐☐☐☐ Describes television systems and subsystems.
- ☐☐☐☐ Describes types of detectors.
- ☐☐☐☐ Connects circuit to demodulate A-M signal.
- ☐☐☐☐ Checks detector circuit functions.
- ☐☐☐☐ Sets up radio frequency amplifier.

OSCILLOSCOPE AND INSTRUMENTATION

- ☐☐☐☐ Checks operation of "CRT" circuit.
- ☐☐☐☐ Modifies part values as needed.
- ☐☐☐☐ Selects parts and assembles horizontal sweep circuit.

- **Identifies generators determining values of sinusoidal and nonsinusoidal waves.**
- **Determines resistance in AC circuits.**
- **Determines effects of resistors, capacitors, inductors on alternating current.**
- **Describes and applies characteristics of series parallel resonant circuits as found in radio and television.**
- Measures voltage with voltmeter.
- Measures current with ammeter.
- Measures resistance with ohmmeter.
- Selects resistors by color coding.
- Calculates volts, amps, and ohms using Ohm's law.
- Identifies electronic parts with VOM multimeter.
- Sets up and uses VTVM type multimeter.
- Sets up and uses oscilloscope.
- Measures current flow in series, parallel, and combination circuits.
- Analyzes circuits using Kirchhoff's laws.
- Sets up and uses curve tracers.

ENTREPRENEURSHIP

- Prepares estimates and bids on jobs.
- Figures prices for parts.
- Figures labor prices.
- Figures service call charges.
- Orders and stocks supplies.
- Requisitions parts.
- Maintains records.
- Inventories and maintains tools.
- Designs a functional electronic shop.

INDUCTANCE

- Determines reactance of AC circuit.
- Determines inductance of AC circuit.
- Determines impedance of AC circuit.
- Explains meaning of self-inductance.
- Defines the unit "Henry".
- Calculates transformer needs.
- Checks transformer needs.

- Describes electrode leads.
- Checks transistors from base.
- Selects transistors for specific purposes.

DIGITAL DESIGN AND APPLICATION

- **Describes digital electronic circuits.**
- Defines digital design problems and specifies solutions.
- Develops truth table defining circuit design.
- Writes logic equation of combination logic circuit operation from truth table.
- Selects circuitry to implement design equations.
- Lists advantages and disadvantages of SSI, MSI, ROMs, and PLAs.
- Designs combination logic circuits for given applications.
- Diagrams digital counter and describes function of sections.
- Designs counter and controller circuits for sequential logic applications.
- Analyzes simple programs using computer instruction sets.

TRANSISTOR AMPLIFIERS

- Connects common-base amplifiers.
- Measures gain of common-base amplifier.
- Checks phase relationship of common-base amplifier.
- Describes special uses of common-collector amplifier.
- Connects common-collector amplifier.
- Tests common-collector amplifier.
- Checks operating conditions using load line analysis.
- Adjusts amplifiers for optimum performance.
- Determines dynamic range of amplifiers.
- Sets up and uses cascaded amplifiers.
- Adjusts amplifier to predetermined frequency.
- Completes assembly of T-R-F receiver.
- Fabricates audio section of A-M superheterodyne receiver.
- Assembles audio section of A-M superheterodyne receiver.
- Tests audio section of A-M superheterodyne receiver.
- Installs intermediate frequency amplifiers.
- Connects test apparatus to I-F amplifier circuits.

- Tests and modifies horizontal sweep circuit as needed.
- Selects parts for CRT vertical amplifier.
- Tests parts for CRT vertical amplifier.
- Assembles CRT vertical amplifier.
- Relates characteristics, installs, and checks detectors for:
  - Fire.
  - Radiation.
  - Sound.
  - Moisture.
- Relates bridge and relay functions in circuits.
- Installs and services devices with timing and switching functions.
- Installs and services power control devices.
- Installs and services integrated circuit linear amplifiers.
- Installs and services integrated circuit oscillators.
- Installs and services basic logic circuits.

COMPUTERS AND OPTRONICS

- **Describes microprocessor theory and logic.**
- Discusses primary computer units and describes their purpose.
- Uses correct computer terminology.
- Explains relationships between computer functions.
- Lists types of memory units and describes their function.
- Identifies and compares computer languages.
- Describes steps in program development.
- Describes operating systems and their functions.
- Develops computer programs.
- Identifies types of light detectors.
- Describes optically coupled electronic systems.
- Lists optoelectronic methods of communication.
- Develops displays using light emitting diodes.
- Makes applications of photodetectors.
- Describes functions of photocoupled data acquisition systems.
- Describes photocoupled data transmission media.
- Makes applications of fiber optics.
- Describes operating principles of lasers and masers.

Competencies Related to Essential Elements are in Bold Type

ESSENTIAL ELEMENTS FOR ALL VOCATIONAL PROGRAMS

DIRECTIONS: Evaluate the trainee, using the rating scale below. Check the appropriate number to indicate the degree of competency. The rating for each of the tasks should reflect job readiness rather than the grade given in the class.

RATING SCALE:
4 Skilled—can work independently with no supervision
3 Moderately skilled—can perform job completely with limited supervision
2 Limited skill—requires instruction and close supervision
1 No exposure—no experience or knowledge in this area

4	3	2	1	
				Identifies characteristics and responsibilities of leaders
				Demonstrates characteristics and responsibilities of group members
				Participates in meetings according to rules of parliamentary procedures
				Functions effectively on committees by accepting assigned responsibilities
				Plans and conducts effective group leadership activities
				Participates in society in a democratic way

4	3	2	1	
				Evaluates career options and employment opportunities
				Demonstrates ability to complete job application, interview and follow-up
				Follows written and oral instructions to complete job task
				Demonstrates punctuality and dependability
				Follows rules, standards, and policies of the work place
				Demonstrates the ability to work cooperatively with others

4	3	2	1	
				Demonstrates responsibility in completing job tasks
				Exhibits work habits and attitudes that increase productivity
				Recognizes opportunities and options for business ownership
				Identifies entry level procedures and planning processes needed to open a business
				Utilizes terms associated with small business
				Recognizes the role of small business in the free enterprise system

COMPETENCY PROFILE

Instructional Program (Occupational Objective) _____ School _____ Date _____

Name: _____ (Last / Middle / First) Social Security No _____ Phone _____

Address: _____ Age _____ Date of Birth: _____ Sex: _____

Racial/Ethnic Designation: _____ Special Needs _____

In Case of Emergency, Contact: _____ Address _____ Home phone _____ Business phone _____

OR

Contact: _____ Address _____ Home phone _____ Business phone _____

Method of Instruction	Grade	Enrollment Date	Withdrawal Date	Completion Date	Total Class Hours	Total Laboratory Hours	Total On-the-job Training Hours	Instructor

ON-THE-JOB TRAINING/WORK EXPERIENCE

Duration of Employment	Job Title	Supervisor's Name	Training Station	Address of Employer	Phone

FOLLOW-UP RECORD

Date	Current Address	Ed Status	Educational Institution	Educational Objective
		☐ Attending ☐ Not Attending		

Not in Labor Force	Un-employed	Military Status	Employed	Employer	Address	Supervisor	Position	Related to Training	Salary
								☐Yes ☐No	

IRONWORKER

JOB COMPETENCIES

DIRECTIONS: Evaluate the student using the rating scale below. Check the appropriate number to indicate the degree of competency. The rating for each of the tasks should reflect job readiness rather than the grade earned in the class.

RATING SCALE:
4 Skilled - can work independently with no supervision
3 Moderately skilled - can perform job completely with limited supervision
2 Limited skill - requires instruction and close supervision
1 No exposure - no experience or knowledge in this area

BASIC SKILLS

- [ ] Identifies and corrects or reports safety hazards.
- [ ] Identifies and utilizes proper storage for inflammables.
- [ ] Identifies and demonstrates correct use of fire extinguishers.
- [ ] Identifies ventilation hazards and takes corrective action.
- [ ] Observes safety labels and signs.
- [ ] Demonstrates proper maintenance, selection, use, and safety in working with machine tools and equipment.
- [ ] Identifies and demonstrates safety awareness in handling materials.
- [ ] Utilizes reference books, charts, and manufacturers' guides.
- [ ] Prepares job estimate from basic print.
- [ ] Inventories materials, supplies, and equipment.

MATH

- [ ] Solves problems using whole numbers, fractions, and decimals.
- [ ] Applies principles of geometry and trigonometry in problem solving, layout, and fabrication.
- [ ] Makes cost analysis of materials.
- [ ] Calculates material weights for the purpose of lifting or moving load.
- [ ] Utilizes math in location of center of load lifting point.

WELDING AND BURNING

- [ ] Demonstrates ability to correctly set up oxy-fuel equipment.
- [ ] Handles, makes preliminary safety inspection, and stores cylinders properly.
- [ ] Identifies types of fuels and their application.
- [ ] Lights and adjusts flame for cutting and properly secures oxy-fuel equipment.

Utilizes oxy-fuel hand cutting torch to:
- [ ] a. cut material to size
- [ ] b. burn holes, slots, and fitting material
- [ ] c. scarf welds
- [ ] Scarf welds by use of air arc gouge.
- [ ] Operates automatic burning machine.
- [ ] Demonstrates knowledge in theory of shielded metal arc welding.
- [ ] Identifies and selects power source and sets current for weld procedure.
- [ ] Tack welds for fabrication and erection purposes.
- [ ] Demonstrates ability to pass welding test as required for the job - certification test.
- [ ] Demonstrates ability to fabricate sections by welding as required for the job - certification test.

- [ ] Demonstrates ability to write specifications for tools, materials, and equipment.
- [ ] Prepares and schedules/plans job from print.
- [ ] Demonstrates proper skills and confidence to work safely in high places.
- [ ] **Demonstrates ability to work cooperatively and safely with co-workers.**
- [ ] **Identifies, selects, and demonstrates proper use of basic hand tools - measuring tools, erection tools, etc.**
- [ ] Demonstrates knowledge in job qualifications, opportunities, and hazards.

PRINT READING

- [ ] Identifies abbreviations, notes, and symbols as they apply to the trade - welding, materials, etc.
- [ ] Demonstrates ability to read and interpret detail drawings for fabrication and erection purposes.
- [ ] Demonstrates ability to read and interpret erection prints - line diagrams.
- [ ] Reads and interprets information found in general notes - type bolts, electrodes, changes, etc.
- [ ] Demonstrates ability to fabricate material from print.
- [ ] Demonstrates ability to erect structural members from print.
- [ ] Demonstrates ability to make freehand sketches.

- [ ] Identifies and makes correct selection of electrodes.
- [ ] Demonstrates knowledge in the theory and application of metallic inert gas welding procedures.
- [ ] Demonstrates ability to fabricate sections by metallic inert gas process as required by job.

FABRICATION AND ERECTION

- [ ] Identifies by name and use clamps and chokes used in lifting or moving material.
- [ ] Selects and properly connects clamps and chokes to material.
- [ ] Inspects and utilizes manufacturer's chart in selection of clamps and chokes.
- [ ] Determines center of load lift point and fastens clamps and chokes for balanced lift.
- [ ] Properly stores and maintains lifting devices - chokes, clamps, etc.
- [ ] Positions, aligns, and fits structural members as necessary.
- [ ] Connects structural members by bolting, welding, etc.
- [ ] Demonstrates ability to utilize hand signals when loads are being moved with crane, fork lifts, etc.
- [ ] Demonstrates ability to properly stack material.
- [ ] Identifies, selects, and properly uses wire fittings - sockets, clevises, hoists, hooks, etc.
- [ ] Installs sheet iron roofing and siding.
- [ ] Identifies structural components with part number and print.

Competencies Related to Essential Elements are in Bold Print

ESSENTIAL ELEMENTS FOR ALL VOCATIONAL PROGRAMS

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4	3	2	1	
				Identifies characteristics and responsibilities of leaders
				Demonstrates characteristics and responsibilities of group members
				Participates in meetings according to rules of parliamentary procedures
				Functions effectively on committees by accepting assigned responsibilities
				Plans and conducts effective group leadership activities
				Participates in society in a democratic way

4	3	2	1	
				Evaluates career options and employment opportunities
				Demonstrates ability to complete job application, interview and follow-up
				Follows written and oral instructions to complete job task
				Demonstrates punctuality and dependability
				Follows rules, standards, and policies of the work place
				Demonstrates the ability to work cooperatively with others

4	3	2	1	
				Demonstrates responsibility in completing job tasks
				Exhibits work habits and attitudes that increase productivity
				Recognizes opportunities and options for business ownership
				Identifies entry level procedures and planning processes needed to open a business
				Utilizes terms associated with small business
				Recognizes the role of small business in the free enterprise system

COMPETENCY PROFILE

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Name _____ (Last, Middle, First) Social Security No _____ Phone _____

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Contact _____ Address _____ Home phone _____ Business phone _____

Method of Instruction	Grade	Enrollment Date	Withdrawal Date	Completion Date	Total Class Hours	Total Laboratory Hours	Total On-the-job Training Hours	Instructor

ON-THE-JOB TRAINING/WORK EXPERIENCE

Duration of Employment	Job Title	Supervisor's Name	Training Station	Address of Employer	Phone

FOLLOW-UP RECORD

Date	Current Address	Ed Status	Educational Institution	Educational Objective
		☐ Attending ☐ Not Attending		

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								☐Yes ☐No	

RADIO AND TELEVISION REPAIRER

JOB COMPETENCIES

DIRECTIONS: Evaluate the student using the rating scale below. Check the appropriate number to indicate the degree of competency. The rating for each of the tasks should reflect the job readiness rather than the grade earned in the class.

RATING SCALE:
4 Skilled - can work independently with no supervision
3 Moderately skilled - can perform job completely with limited supervision
2 Limited Skill - requires instruction and close supervision
1 No Exposure - no experience or knowledge in this area

Video Recorders

4 3 2 1

- Describes various types of systems.
- Troubleshoots video heads:
  - Cleans and adjusts.
  - Takes measurements.
  - Removes and replaces.
- Takes mechanical measurements:
  - Tape loading mechanism.
  - Reel table height.
  - Tape tension.
  - Brake tension.
- Makes electrical measurements:
  - RF envelope.
  - Balance for head amps.
  - Tracking.
- Removes and replaces belts.
- Removes and replaces sensors.

Record and Tape Players

- Replaces and adjusts styles to specifications.
- Cleans and aligns tape heads to specifications.
- Cleans and lubricates drive mechanisms.
- Demagnetizes tape heads and checks operation.
- Tests continuity and repairs wiring.
- Makes repairs and/or replaces:
  - Record changer change unit.
  - Cut-off mechanisms.
  - Speed change mechanisms.
  - Cables and plugs.
  - Cartridges.
  - Tape heads.
  - Integrated units.

Television

TV SIGNAL

4 3 2 1

- Demonstrates knowledge of signal characteristics:
  - Luminance.
  - Chroma.
  - Sound.
- Describes purpose and function of channel allocation:
  - Air.
  - Cable.
- Describes types of cable assignments:
  - IRC.
  - HRC.
  - Standard.

ANTENNAS

- Explains function of antenna components.
- Describes procedure for grounding antennas.
- Selects and installs two sets couplers.
- Demonstrates understanding of home distribution systems.
- Selects and installs antenna amplifiers.
- Installs antennas:
  - Mast mount.
  - Wall mount.
  - Chimney mount.
  - Roof mount.
  - Tower.
  - Satellite.
  - UHF.
  - VHF.
- Installs rotors.
- Installs lead-ins and coaxial cables.

TUNERS

- Describes function of TV tuners.
- Adjusts misaligned tuner oscillators.
- Adjusts detent switch and channel selectors.
- Troubleshoots electronic tuners:
  - With mechanical presets.
  - With micro-processor tuning presets.
  - With synthesized tuning.
- Troubleshoots fighting damaged tuners.
- Inspects, cleans and lubricates tuners.
- Tests voltage of UHF and VHF tuners.
- Removes and replaces complete tuners.

Television (cont'd)

4 3 2 1

CHROMA SECTION

- Replaces color killer tube/transistor and adjusts.
- Relates color problems and their causes.
- Uses dot-bar generator to problem analysis.
- Uses oscilloscope in wave form analysis of:
  - Burst output.
  - Input to color demodulators.
  - Input to phase detector.
  - Output of bandpass amp.
  - Output of red demodulator.
  - Output of blue demodulator.
  - Output of green demodulator.
  - Output of 3.85 MHz oscillator.
  - Keying pulse to blanker.
  - Gating pulse to burst amp.
- Aligns color convergence to specifications.
- Corrects color purity in maladjusted set.
- Tests color IF gate.
- Performs degaussing procedure.
- Tests for malfunctions and replaces faulty:
  - Color IF tubes or transistors.
  - Video amplifier transistors.
  - Color SYNC amplifiers.
  - Color oscillators.
  - Color intensity controls.
  - Color demodulators.
  - ACC circuits.
  - Color picture tubes.
- Tests and replaces faulty chroma/video section:
  - Printed circuits.
  - Integrated circuits.

Electrical

- [ ] Demonstrates understanding of theory of electricity.
- [ ] Describes power generation and distribution.
- [ ] Defines voltage, current, and resistance.
- [ ] Reads and interprets schematic diagrams.
- [ ] Reads and interprets electrical prints.
- [ ] Identifies types of circuits.
- [ ] Solders electrical connections.
- [ ] Installs and connects various types of switches.
- [ ] Connects electrodes and grounding conductors.
- [ ] Selects and installs ground fault circuit interrupters.
- [ ] Connects 120V, 240V, 120/240V circuits.
- [ ] Defines alternating current applications.
- [ ] Defines direct current applications.
- [ ] Describes difference between ground and neutral.
- [ ] Identifies ground problems and solutions.

Radio

- [ ] Describes principles of radio.
- [ ] Tests and replaces batteries.
- [ ] Repairs and replaces cord and plug.
- [ ] Tests and repairs antenna.
- [ ] Tests and repairs or replaces speakers.
- [ ] Repairs volume and tone controls.
- [ ] Repairs earphones and earphone plugs.
- [ ] Removes and installs auto radios and speakers.
- [ ] Tests and repairs or replaces printed circuits.
- [ ] Diagnoses oscillator section problems.
- [ ] Diagnoses RF section problems.
- [ ] Diagnoses I.F. amplifier problems.
- [ ] Diagnoses I.F. transformer problems.
- [ ] Tests and replaces capacitors.
- [ ] Tests and replaces resistors.
- [ ] Tests and replaces transistors and integrated circuits.

VERTICAL AND HORIZONTAL CIRCUITS

- [ ] Adjusts high voltage controls to specifications.
- [ ] Adjusts horizontal centering controls.
- [ ] Adjusts horizontal frequency, linearity and width.
- [ ] Adjusts vertical linearity, centering and height.
- Tests and replaces horizontal output transformer and transistor:
  - [ ] With damper diode.
  - [ ] Without damper diode.
- [ ] Adjusts horizontal oscillator coil to specifications.
- [ ] Compares wave forms at input of horizontal output.
- [ ] Tests and replaces defective yokes.
- [ ] Tests vertical integrator circuits.
- [ ] Tests vertical SYNC pulse.
- [ ] Adjusts focus controls.

AGC AND SYNC CIRCUITS

- [ ] Substitute AGC with bias box.
- [ ] Checks voltage at all AGC test points.
- [ ] Checks resistance at all AGC test points.
- [ ] Compares wave forms at input to AGC circuits.
- [ ] Compares keying pulse at AGC circuits.
- [ ] Adjusts AGC controls.
- [ ] Makes adjustments on noise inverter controls.
- [ ] Compares SYNC wave forms.
- [ ] Checks resistance at all SYNC check points.
- [ ] Checks voltage at all SYNC check points.

CRT, IF, VIDEO AMP AND OUTPUT

- [ ] Tests AGC to VHF tuner and IF circuits.
- [ ] Tests composite video at detector output.
- [ ] Tests video detector DC level at output.
- [ ] Does complete ohmmeter analysis.
- [ ] Performs complete voltage analysis.

AUDIO CIRCUITS

- [ ] Troubleshoots audio circuits to locate defects.
- [ ] Cleans volume controls.
- [ ] Replaces faulty volume controls.
- [ ] Adjusts sound coils to specifications.

POWER SUPPLY

- [ ] Tests power transformers and input/output.
- [ ] Tests automatic degaussing circuits.
- [ ] Tests electrolytic capacitors.
- [ ] Tests AC ripple content.
- [ ] Troubleshoots circuit breakers and fuses.
- [ ] Tests and replaces filter chokes.
- [ ] Troubleshoots faulty rectifier diodes.
- [ ] Replaces faulty on-off switches.
- [ ] Tests rectifier DC voltage output.
- [ ] Tests power supply regulation.
- [ ] Makes proper connections for hot chassis testing.
- [ ] Uses isolation transformers in testing.

Electronic Theory

- [ ] Compares digital techniques to analog.
- [ ] Describes digital electronic circuits.
- [ ] Defines digital design problems and solutions.
- [ ] Describes structure and operation of semi-conductors.
- [ ] Tests semi-conductors diodes/transistors using volt-ohm meters.
- [ ] Defines functions of three basic electrodes.
- [ ] Identifies and tests capacitors.
- [ ] Describes capacitor functions in machines.
- [ ] Makes in-service checks with VOM.
- [ ] Lists basic types of logic elements.
- [ ] Describes functions of inverters, AND, OR, NAND, and NOR gates.
- [ ] Identifies logic functions from truth tables.
- [ ] Identifies logic functions from logic equations.
- [ ] Identifies specialized types of integrated circuits.
- [ ] Describes function of TTL, ECL, and CMOS integrated circuits from schematics.
- [ ] Selects digital ICs for given applications.
- [ ] Identifies types and functions of flip-flops using logic diagrams.
- [ ] Describes optically coupled electronic systems.
- [ ] Describes operating principles of lasers and masers.

Entrepreneurship

- [ ] Designs functional radio-television repair shop.
- [ ] Requisitions tools and equipment.
- [ ] Requisitions supplies and parts.
- [ ] Estimates repair costs.
- [ ] Keeps ledger for parts ordered, parts received, approved for payments.
- [ ] Interprets and updates parts catalogs.
- [ ] Interprets and updates service manuals.
- [ ] Completes service - repair invoice.
- [ ] Prepares repair shop budget.
- [ ] Schedules repair jobs.
- [ ] Assigns work schedules.
- [ ] Maintains records.

ESSENTIAL ELEMENTS FOR ALL VOCATIONAL PROGRAMS

DIRECTIONS: Evaluate the trainee, using the rating scale below. Check the appropriate number to indicate the degree of competency. The rating for each of the tasks should reflect job readiness rather than the grade given in the class.

RATING SCALE:
4 Skilled—can work independently with no supervision
3 Moderately skilled—can perform job completely with limited supervision
2 Limited skill—requires instruction and close supervision
1 No exposure—no experience or knowledge in this area

4	3	2	1	
				Identifies characteristics and responsibilities of leaders
				Demonstrates characteristics and responsibilities of group members
				Participates in meetings according to rules of parliamentary procedures
				Functions effectively on committees by accepting assigned responsibilities
				Plans and conducts effective group leadership activities
				Participates in society in a democratic way

4	3	2	1	
				Evaluates career options and employment opportunities
				Demonstrates ability to complete job application, interview and follow-up
				Follows written and oral instructions to complete job task
				Demonstrates punctuality and dependability
				Follows rules, standards, and policies of the work place
				Demonstrates the ability to work cooperatively with others

4	3	2	1	
				Demonstrates responsibility in completing job tasks
				Exhibits work habits and attitudes that increase productivity
				Recognizes opportunities and options for business ownership
				Identifies entry level procedures and planning processes needed to open a business
				Utilizes terms associated with small business
				Recognizes the role of small business in the free enterprise system

COMPETENCY PROFILE

Instructional Program (Occupational Objective) _____ School _____ Date _____

Name: _____ (Last / Middle / First) Social Security No _____ Phone _____

Address: _____ Age _____ Date of Birth _____ Sex _____

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Method of Instruction	Grade	Enrollment Date	Withdrawal Date	Completion Date	Total Class Hours	Total Laboratory Hours	Total On-the-job Training Hours	Instructor

ON-THE-JOB TRAINING/WORK EXPERIENCE

Duration of Employment	Job Title	Supervisor's Name	Training Station	Address of Employer	Phone

FOLLOW-UP RECORD

Date	Current Address	Ed Status	Educational Institution	Educational Objective
		☐ Attending ☐ Not Attending		

Not in Labor Force	Un-employed	Military Status	Employed	Employer	Address	Supervisor	Position	Related to Training	Salary
								☐Yes ☐No	

COMPUTER MAINTENANCE TECHNICIAN

JOB COMPETENCIES

DIRECTIONS: Evaluate the student using the rating scale below. Check the appropriate number to indicate the degree of competency. The rating for each of the tasks should reflect job readiness rather than the grade earned in the class.

RATING SCALE:
4 Skilled - can work independently with no supervision
3 Moderately skilled - can perform job completely with limited supervision
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1 No exposure - no experience or knowledge in this area

Semiconductors

4 3 2 1

- ☐☐☐☐ Describes semiconductors structure and operation.
- ☐☐☐☐ Explains the forming of semiconductor diodes and their function as rectifiers.
- ☐☐☐☐ Defines functions of three basic electrodes.
- ☐☐☐☐ Explains differences in NPN and PNP transistors.
- ☐☐☐☐ Identifies transistor symbols in schematics.
- ☐☐☐☐ Tests semiconductor diodes/transistors using volt-ohm meters.
- ☐☐☐☐ Determines most useful transistor parameter.
- ☐☐☐☐ Describes characteristics of the SCR and explains its operation.
- ☐☐☐☐ Identifies types of light detectors and describes their function.
- ☐☐☐☐ Describes how electronic systems are optically coupled.
- ☐☐☐☐ Identifies the various types of optoelectronic communication devices and explains their characteristics.

Digital Electronics

- ☐☐☐☐ Describes digital electronics circuits.
- ☐☐☐☐ Defines digital design problems and specific solutions.
- ☐☐☐☐ Develops truth table defining circuit design.
- ☐☐☐☐ Writes logic equation of combination logic circuit operation from truth table.
- ☐☐☐☐ Selects circuitry to implement design equations.
- ☐☐☐☐ Lists advantages and disadvantages of SSI, MSI, ROMs, and PLAs.
- ☐☐☐☐ Designs combination logic circuits for given applications.
- ☐☐☐☐ Designs counter and controller circuits for sequential logic applications.
- ☐☐☐☐ Analyzes simple programs using computer instruction sets.

Microcomputers

4 3 2 1

- ☐☐☐☐ Describes the primary units of a computer and explains their function.
- ☐☐☐☐ Describes microprocessor theory and logic.
- ☐☐☐☐ Identifies and compares computer languages.
- ☐☐☐☐ Traces the data path through the computer and identifies each particular section and its function.
- ☐☐☐☐ Troubleshoots the power supply system of a microcomputer.
- ☐☐☐☐ Inspects and troubleshoots the monitor system.
- ☐☐☐☐ Identifies the function of and properly uses correct measuring device in testing and troubleshooting computers.
- ☐☐☐☐ Performs diagnosis of computer circuit with oscilloscope.
- ☐☐☐☐ Identifies types of cleaning chemicals and lubricants used in the service and maintenance of computers.
- ☐☐☐☐ Performs diagnosis of computer and removes and replaces inoperative connections.
- ☐☐☐☐ Identifies different memory circuits and their function.
- ☐☐☐☐ Identifies the function of the timing circuit and reads and interprets clock signals with a scope.
- ☐☐☐☐ Identifies the principal busses of the system, their structure, and their function.
- ☐☐☐☐ Identifies the function of the video display generator, its operation, and relationship between keyboard and monitor.
- ☐☐☐☐ Tests VDG input-output.
- ☐☐☐☐ Explains the function of the peripheral interface adapters, identifies types and characteristics.
- ☐☐☐☐ Tests PIA pins and compares to the service check out chart.
- ☐☐☐☐ Identifies types of registers, explains function, and explains jobs performed.
- ☐☐☐☐ Troubleshoots register problems.
- ☐☐☐☐ Determines parts to be replaced, identify parts from a schematic or service manual, writes specification, locates source for parts, and orders or purchases required parts.
- ☐☐☐☐ Cleans and services the disk operating system (DOS).
- ☐☐☐☐ Correctly aligns, adjusts, and calibrates components of the disk operating system.
- ☐☐☐☐ Identifies common DOS problems, troubleshoots system, and makes necessary repairs.
- ☐☐☐☐ Troubleshoots, removes, and replaces keyboard.

Entrepreneurship

- ☐☐☐☐ Prepares estimates and bids on jobs.
- ☐☐☐☐ Figures prices for parts.
- ☐☐☐☐ Figures service call charges.
- ☐☐☐☐ Orders and stocks supplies.
- ☐☐☐☐ Requisitions parts.
- ☐☐☐☐ Maintains records.
- ☐☐☐☐ Inventories and maintains records.

Electronic Circuits

- ☐☐☐☐ Describes power relationship to electronic circuitry.
- ☐☐☐☐ Analyzes rectifier requirements and determines proper rectifier.
- ☐☐☐☐ Installs rectifier for proper polarity and tests rectifier function.
- ☐☐☐☐ Identifies and describes characteristics of various types of filter circuits.
- ☐☐☐☐ Selects units, assembles, installs, and evaluate filter circuit performance.
- ☐☐☐☐ Defines types of voltage divider circuits and describes their use.
- ☐☐☐☐ Selects and installs required voltage divider and tests.
- ☐☐☐☐ Selects components, constructs, and tests complete power supply.
- ☐☐☐☐ Connects and measures gain of common-base amplifier.
- ☐☐☐☐ Adjusts amplifiers for optimum performance.
- ☐☐☐☐ Describes special uses of common-collector amplifier.
- ☐☐☐☐ Connects and tests common-collector amplifier
- ☐☐☐☐ Determines impedance values of amplifier.
- ☐☐☐☐ Determine voltage gain, power gain, and phase relationship of an amplifier.

Basic Electronic Skills

- ☐☐☐☐ Identifies basic electronic components by name, letter symbol, schematic symbol, and describes their function.
- ☐☐☐☐ Reads and interprets electronic diagrams and schematics.
- ☐☐☐☐ Identifies and explains the sources of electricity.
- ☐☐☐☐ Applies principles of math and physics to electronics.
- ☐☐☐☐ Demonstrates proper use, maintenance, care and storage of tools and equipment.
- ☐☐☐☐ Demonstrates use of voltage, current, resistance, scientific notation, and metric prefixes.
- ☐☐☐☐ Prepares and solders electrical connections.
- ☐☐☐☐ Explains the function of ammeter, ohmmeter, and volt meter and demonstrates proper use and care in testing circuits.
- ☐☐☐☐ Describes function of a VOM Analog multimeter and tests circuits.
- ☐☐☐☐ Describes Ohm's law and power relationship.
- ☐☐☐☐ Explains operation of electromagnetic devices.
- ☐☐☐☐ Identifies the opportunities and skills of the trade.

Alternating Current Circuits

- ☐☐☐☐ Demonstrates knowledge of AC voltage and current by determining sine wave relationship and conversions.
- ☐☐☐☐ Computes instantaneous sine wave values, wave lengths and values.
- ☐☐☐☐ Determines the effect of inductance in AC circuits.
- ☐☐☐☐ Determines reactance of AC circuit.
- ☐☐☐☐ Describes types of transformers and determines transformer requirements.
- ☐☐☐☐ Calculates transformer efficiency.
- ☐☐☐☐ Determines impedance of AC circuit.
- ☐☐☐☐ Identifies, selects for use, and tests capacitors.
- ☐☐☐☐ Compares effect of alternating and direct current on capacitors.
- ☐☐☐☐ Determines resonance in a series RCL circuit.
- ☐☐☐☐ Determines resonance in a parallel RCL circuit.
- ☐☐☐☐ Explains basic theory of frequency modulation.
- ☐☐☐☐ Identifies and explains the principles of oscillators.
- ☐☐☐☐ Measures frequency and determines output.
- ☐☐☐☐ Sets up and properly operates oscillators - Armstrong, Hartley, Colpitts, Crystal, RC and Multivabator.
- ☐☐☐☐ Matches proper oscillator circuits with devices.
- ☐☐☐☐ Selects components, constructs, and tests power supply.

Direct Current Circuits

- ☐☐☐☐ Identifies and explains the sources of electricity.
- ☐☐☐☐ Identifies and selects resistors by color coding.
- ☐☐☐☐ Measures current, voltage, amperage, and power.
- ☐☐☐☐ Measures voltage drop in a series resistant circuit.
- ☐☐☐☐ Analyzes current values in a series circuit.
- ☐☐☐☐ Describes the functional features of conductors and insulators.
- ☐☐☐☐ Analyzes power and resistance in a series circuit.
- ☐☐☐☐ Measures and calculates voltage, current, power, and resistance in a parallel circuit.
- ☐☐☐☐ Measures and calculates values in a series-parallel circuit.
- ☐☐☐☐ Calculates and measures capacitance in a DC circuit.
- ☐☐☐☐ Calculates and measures inductance in a DC circuit.
- ☐☐☐☐ Designs and builds direct current circuits using bread board and printed circuit.

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RATING SCALE:
4 Skilled – can work independently with no supervision
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4	3	2	1	
				Identifies characteristics and responsibilities of leaders
				Demonstrates characteristics and responsibilities of group members
				Participates in meetings according to rules of parliamentary procedures
				Functions effectively on committees by accepting assigned responsibilities
				Plans and conducts effective group leadership activities
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4	3	2	1	
				Evaluates career options and employment opportunities
				Demonstrates ability to complete job application, interview and follow-up
				Follows written and oral instructions to complete job task
				Demonstrates punctuality and dependability
				Follows rules, standards, and policies of the work place
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4	3	2	1	
				Demonstrates responsibility in completing job tasks
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				Recognizes opportunities and options for business ownership
				Identifies entry level procedures and planning processes needed to open a business
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Duration of Employment	Job Title	Supervisor's Name	Training Station	Address of Employer	Phone

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PRE-TECH LAW ENFORCEMENT

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HISTORY OF LAW

4321

- [ ] Explains the purpose and need for laws.
- [ ] Describes the evolution of laws from early Rome to the modern age.
- [ ] Explains British influence on the American system of law enforcement.
- [ ] Describes contributions made by Fielding, Colquhoin, and Peel.
- [ ] Lists Peels' Principles.
- [ ] Explains why there is no national police force.
- [ ] Compares enforcement agency organization in northern states and southern states.
- [ ] Explains the development of municipal, county, and state police.
- [ ] Traces the development of the legal system in the United States.

PATROL PROCEDURE

4321

- [ ] Lists purposes of patrol.
- [ ] Writes clear, concise, and accurate reports from facts given.
- [ ] Lists guidelines for developing officer informant relations.
- [ ] Lists the important items of concern in conducting a field interrogation.
- [ ] Relates the meaning of the concept "due process of law".
- [ ] Demonstrates the proper way to conduct a misdemeanor vehicle pullover.
- [ ] Explains the safest way to conduct a felony pullover.
- [ ] Explains the proper way for removing suspects from vehicles.
- [ ] Demonstrates proper frisk or search procedure.
- [ ] Describes basic types of search positions.
- [ ] Demonstrates proper technique for applying hand cuffs.
- [ ] Describes proper procedure in searching a vehicle.
- [ ] Explains various procedures used in different types of police calls.
- [ ] Lists the three types of burglaries.
- [ ] Describes what must occur for a dying declaration to be used in court.
- [ ] Writes offense reports.
- [ ] Recognizes and completes sample accident forms.
- [ ] Prepares an accident investigation.
- [ ] Conducts a mock traffic investigation.
- [ ] Fills out a driving while intoxicated report.
- [ ] Lists the purposes of a good police report.
- [ ] Administers emergency first aid.
- [ ] Administers CPR.

CORRECTIONS

4321

- [ ] Lists the purpose corrections has served in history.
- [ ] Explains the influence of the British penal system on the American.
- [ ] Lists the five common types of institutions.
- [ ] Lists the institutional staff and their duties.
- [ ] Defines the six problem areas in correctional reform.
- [ ] Describes the difference between jails and prisons.
- [ ] Describes the different inmate programs provided by each.
- [ ] Profiles the male and female prison population.
- [ ] Lists the requirements for becoming a correctional officer.
- [ ] Explains the rights of prisoners.
- [ ] Explains the term "detainer".

PENAL CODE

- [ ] Lists objectives of the code.
- [ ] Explains jurisdiction of the Penal Code.
- [ ] Explains burden of proof.
- [ ] Lists culpable mental states.
- [ ] Explains mistake of law and intoxication as an affirmative defense.
- [ ] Explains entrapment.
- [ ] Explains the use of force and the limitations on use of force.
- [ ] Differentiates felony and misdemeanor and defines their classification.
- [ ] Explains and recognizes inchoate offenses.
- [ ] Lists offenses against the person.
- [ ] Explains the difference between kidnaping and false imprisonment.
- [ ] Lists sexual offenses.
- [ ] Lists and recognizes assaultive offenses.

INVESTIGATION

- Lists the goals of investigation.
- Explains the difference between interview and interrogation.
- Explains exclusionary rule.
- Defines modus operandi.
- Lists sources of information in an investigation.
- Lists types of clearance concerning investigative reports.
- Lists in proper order the things to do on arrival at a crime scene.
- Lists the legal requirements concerning physical evidence.
- Explains how to preserve evidence.
- Explains chain of evidence.
- Explains the types of evidence.
- Recognizes the elements of a crime.
- Draws evidentiary conclusions that will link the suspect to the scene.
- Inks and transfers fingerprints to a fingerprint card.
- Dusts for and lifts latent prints.
- Classifies fingerprints according to type: whorl, loop, arch, etc.
- Lists the different techniques used to sketch a crime scene.
- Diagrams and records mock crime scenes.
- Writes an investigative report.
- Defines res gestae statements.
- Recites the Miranda or civil rights warning.

COMMUNICATIONS

- Lists the codes used in police communications.
- Demonstrates correct technique in using a hand held radio.
- Explains what information is maintained on TCIC and NCIC.
- Lists characteristics of body language.
- Writes standard memos.
- Writes letters using proper format.
- Gives verbal reports.

COURT PROCEDURE

- Describes the organizational characteristics of the courts.
- Explains the development of the different court systems.
- Explains the federal judiciary.
- Defines exclusionary rule.
- Lists supreme court cases affecting the exclusionary rule.
- Traces misdemeanor procedure from complaint to sentencing.
- Traces the path of a felony complaint.
- Defines bail.
- Lists the different types of bail.
- Explains importance and procedure for an examining trial.
- Explains how grand juries are selected and conduct hearings.
- Lists pretrial motions and explains why each is necessary.
- Explains pleadings in a criminal action.
- Explains how plea bargaining works.
- Explains why a pre-trial hearing might be necessary.
- Explains pre-trial motions.
- Lists the steps to a trial.
- Lists court personnel and their duties.
- Presents a mock trial.
- Explains post conviction remedies.
- Explains probation and parole.

JUVENILE LAW AND FAMILY CODE

- Describes the concept of juvenile justice and early reform efforts.
- Explains parens patriae and individualized justice.
- Identifies high risk juveniles.
- Explains the charges that can be brought against a juvenile.
- Explains juvenile judicial proceedings.
- Explains the liability of parents for conduct of the child.
- Lists the reasons for termination of parent-child relationship.

- Lists crimes of public indecency.
- Defines a hand gun.
- Lists prohibited weapons.
- Explains what is meant by unlawful carrying of weapons.
- Lists places where weapons are prohibited.
- Explains what is meant by gambling.
- Lists and recognizes offenses against the family.
- Explains offenses against property.
- Differentiates robbery, aggravated robbery, burglary, and theft.
- Lists the different types of theft.
- Explains the term fraud and lists offenses considered fraud.
- Lists offenses against public administration.
- Explains the difference between perjury and aggravated perjury.
- Explains the difference in resisting arrest and evading arrest.
- Lists what is official misconduct.
- Lists the different forms of disorderly conduct.
- Defines riot.
- Lists offenses against public decency.

CODE OF CRIMINAL PROCEDURE

- Explains due course of law.
- Lists the rights of the accused.
- Explains what is meant by writ of habeas corpus.
- Lists who are magistrates.
- Explains what is meant by common law.
- Lists who are peace officers.
- Explains the statute of limitation.
- Relates the limitation on each offense.
- Explains when an officer may make an arrest without a warrant.
- Explains when a search warrant is issued.
- Explains subpoena.
- Explains speedy trial and time limitation.

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				Demonstrates characteristics and responsibilities of group members
				Participates in meetings according to rules of parliamentary procedures
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				Participates in society in a democratic way

4	3	2	1	
				Evaluates career options and employment opportunities
				Demonstrates ability to complete job application, interview and follow-up
				Follows written and oral instructions to complete job task
				Demonstrates punctuality and dependability
				Follows rules, standards, and policies of the work place
				Demonstrates the ability to work cooperatively with others

4	3	2	1	
				Demonstrates responsibility in completing job tasks
				Exhibits work habits and attitudes that increase productivity
				Recognizes opportunities and options for business ownership
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ON-THE-JOB TRAINING/WORK EXPERIENCE

Duration of Employment	Job Title	Supervisor's Name	Training Station	Address of Employer	Phone

FOLLOW-UP RECORD

Date	Current Address	Ed Status	Educational Institution	Educational Objective
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HEAVY EQUIPMENT REPAIRER

JOB COMPETENCIES

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4321 *MISCELLANEOUS*

- [ ] Operates equipment to diagnose defects.
- [ ] Tests overhauled equipment.
- [ ] Measures worn parts with micrometer and gages.
- [ ] Interprets repair and parts manuals.
- [ ] Interprets schematic symbols and diagrams.
- [ ] Interprets graphic charts.
- [ ] Operates oxyacetylene cutting equipment.
- [ ] Adjusts electric arc welder for specific jobs.
- [ ] Arc welds broken parts and structural members.
- [ ] Oxyacetylene welds broken parts and structural members.
- [ ] Operates hoists and uses hand tools.
- [ ] Operates pneumatic equipment and air tools.
- [ ] Communicates using trade terms and phrases.

4321 *PNEUMATICS*

- [ ] Describes uses of pneumatics in industry.
- [ ] Performs routine service on air compressors.
- [ ] Describes various types of air compressors.
- [ ] Lists variations in compressor cylinder arrangements.
- [ ] Defines purpose and function of compressor components.
- [ ] Analyzes air compressor malfunctions.
- [ ] Disassembles and repairs air compressors.
- [ ] Disassembles and repairs suction pumps.
- [ ] Disassembles and repairs pressure pumps.
- [ ] Disassembles and repairs vacuum pumps.
- [ ] Describes advantages of pneumatic motors.
- [ ] Explains differences between actuators and air motors.
- [ ] Disassembles and repairs rotary vane motors.
- [ ] Disassembles and repairs axial piston motors.
- [ ] Disassembles and repairs radial piston motors.
- [ ] Disassembles and repairs single piston motors.
- [ ] Explains friction loss in pneumatic components.
- [ ] Computes pneumatic motor requirements.
- [ ] Sets up pneumatic system operation.
- [ ] Services and repairs air-driven actuators.
- [ ] Services and repairs pneumatic accessory equipment.

BRAKE SYSTEMS

- [ ] Analyzes brake malfunctions.
- [ ] Describes various types of brake systems.
- [ ] Services and adjusts brake linkage.
- [ ] Services and repairs shaft-mounted disk brakes.
- [ ] Repairs and adjusts external-band brakes.
- [ ] Services and repairs steering brakes.
- [ ] Services and repairs internal-expanding brakes.
- [ ] Services and repairs air brakes systems.

4321 *COOLING SYSTEMS*

- [ ] Describes purpose and functions of cooling system components.
- [ ] Pressure tests cooling systems.
- [ ] Steam cleans radiator coils and fins.
- [ ] Services water filters.
- [ ] Flushes and refills cooling systems.
- [ ] Adds cleaner and neutralizer to coolant.
- [ ] Removes, replaces, adjusts fan belts.
- [ ] Removes, tests, and replaces thermostats.
- [ ] Removes and replaces radiators and hoses.
- [ ] Removes and replaces water pumps.
- [ ] Selects and adds antifreeze.

ELECTRICAL SYSTEMS

- [ ] Describes gasoline engine ignition components and functions.
- [ ] Analyzes and corrects distributor malfunctions.
- [ ] Corrects spark plug malfunctions.
- [ ] Tests and replaces ignition coils as needed.
- [ ] Replaces damaged wiring as needed.
- [ ] Services and tests storage batteries.
- [ ] Describes cranking system components and functions.
- [ ] Removes and repairs starter motors.
- [ ] Tests and repairs starter solenoid switches.
- [ ] Services and tests charging system components.
- [ ] Repairs direct current generators.
- [ ] Disassembles and repairs alternators.
- [ ] Adjusts voltage regulators.
- [ ] Changes out glow plugs and relays.
- [ ] Troubleshoots wiring circuits.

ENGINES

- [ ] Identifies types and uses of industrial engines.
- [ ] Explains principles of internal combustion engines.
- [ ] Describes differences in diesel and gasoline engines.
- [ ] Describes principles of 4-stroke cycle.
- [ ] Describes principles of 2-stroke cycle.
- [ ] Performs routine engine maintenance.
- [ ] Explains forced lubrication in engines.
- [ ] Tests and repairs by-pass valves.
- [ ] Tests and repairs pressure release valves.
- [ ] Removes and replaces engine oil filters.
- [ ] Services oil coolers.
- [ ] Replaces oil pumps.
- [ ] Describes types and functions of air cleaners.
- [ ] Removes and replaces air cleaner hoses.
- [ ] Services oil-bath air cleaners.
- [ ] Services and maintains dry-type air cleaners.
- [ ] Outlines maintenance procedures on blowers.
- [ ] Removes, tests, and replaces blower assemblies.
- [ ] Relates principles of turbochargers.
- [ ] Removes, tests, and replaces turbochargers.
- [ ] Relates principles of air silencers.
- [ ] Removes and repairs air silencers.
- [ ] Performs tune-ups on gasoline engines.
- [ ] Performs tune-ups on diesel engines.
- [ ] Performs major gasoline engine overhauls.
- [ ] Performs major diesel engine overhauls.
- [ ] Replaces engines and subassemblies.

HYDRAULIC SYSTEMS

- [ ] Describes uses of hydraulics in industry.
- [ ] Performs routine service on hydraulic systems.
- [ ] Describes various types of oil pumps.
- [ ] Identifies oil pump components and functions.
- [ ] Analyzes hydraulic system malfunctions.
- [ ] Disassembles and repairs piston-type oil pumps.
- [ ] Disassembles and repairs gear-type oil pumps.
- [ ] Disassembles and repairs rotor-type oil pumps.
- [ ] Disassembles and repairs vane-type oil pumps.
- [ ] Describes types of hydraulic cylinders.
- [ ] Removes and repairs hydraulic hoses.
- [ ] Identifies and repairs safety, check, and control valves.
- [ ] Troubleshoots power steering systems.

POWER TRAINS

- [ ] Performs routine power train maintenance.
- [ ] Describes purpose and function of power train components.
- [ ] Analyzes power train malfunctions.
- [ ] Describes various types of clutches.
- [ ] Repairs and adjusts band-type clutches.
- [ ] Repairs and adjusts single-disk clutches.
- [ ] Repairs and adjusts multiple-disk clutches.
- [ ] Repairs and adjusts wet and dry clutches.
- [ ] Removes, repairs, and reassembles transmissions.
- [ ] Uses shims to adjust transmissions.
- [ ] Repairs and adjusts tranverse-mounted transmissions.
- [ ] Services and repairs differentials and axles.
- [ ] Repairs and adjusts final drives.
- [ ] Repairs and adjusts steering clutches.
- [ ] Removes and replaces driving axles.
- [ ] Repairs and adjusts direct power take-offs.
- [ ] Repairs and adjusts indirect power take-offs.
- [ ] Services and repairs belt pulley assemblies.
- [ ] Services and repairs suspension systems.

FUEL SYSTEMS

- [ ] Lists gasoline fuel system components and their functions.
- [ ] Performs routine maintenance on fuel tanks.
- [ ] Rebuilds and adjusts carburetors.
- [ ] Rebuilds and/or replaces fuel pumps.
- [ ] Builds and replaces damaged fuel lines.
- [ ] Cleans and replaces fuel filters and strainers.
- [ ] Describes diesel fuel system components and their functions.
- [ ] Describes fuel oil types and additives.
- [ ] Identifies types of diesel engine governors.
- [ ] Repairs and adjusts hydraulic governors.
- [ ] Repairs and adjusts mechanical governors.
- [ ] Describes types of injection systems.
- [ ] Removes, installs, and tests fuel injectors.
- [ ] Tests fuel injection pumps.
- [ ] Removes, pop tests, and repairs injection nozzles.
- [ ] Installs and adjusts injection nozzles.

ENTREPRENEURSHIP

- [ ] Describes business regulations and laws.
- [ ] Defines types of business insurance.
- [ ] Designs functional repair shop.
- [ ] Describes types of business organization.
- [ ] Relates personal factors of business ownership.
- [ ] Inventories tools and supplies.
- [ ] Orders and stocks supplies.
- [ ] Maintains records and prepares work orders.
- [ ] Estimates parts and labor on jobs.
- [ ] Schedules jobs.

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